

## ARCHIVES OF OTOTOLOGY.

### A SERIES OF CASES OF SUPPURATIVE DISEASE OF THE TEMPORAL BONE, WITH COMMENTS.

By SWAN M. BURNETT, M.D., Ph.D., WASHINGTON, D. C.

*(With 1 figure in the text and Text-plates Nos. I. and II.)*

**F**OLLOWING close upon one another, I have had, during the last nine months, a series of cases of suppuration of the temporal bone, representing such a variety of the clinical and pathological aspects of the disease, as to render them, in my opinion, worthy of being reported seriatim, with some other illustrative cases, as a contribution to the further study of that highly important condition. The series, comprehending the white and colored races, runs the gamut from the simplest to the most severe ending in death, and, in ages of the patients, from six months to seventy-two years.

**CASE I.**— Acute mastoiditis following grippe in a white woman of thirty-four years. Opening and cleaning out of the mastoid cavity. Exposure of the dura mater. Cure.

Mrs. S., white, aged thirty-four. Was first seen at my clinic at the Emergency Hospital on February 27, 1899, when she gave the following history : She had the grippe in January, during which she suffered much with pains in the head, and on convalescence the left ear began to trouble her. It finally broke and began to discharge. For this she was treated by a general practitioner. On the 21st of February, the discharge ceased and a swelling was soon after noticed behind the ear. This was accompanied with great pain. She was seen on the date above mentioned by Dr. Dufour, one of the assistants, who ordered cold applications behind the auricle and syringing of the ear with hot water. Under this treatment the symptoms subsided quite considerably, the pain became less, and the swelling was reduced ; still, surgical interference was considered imperative and when I saw her on

March 1st at 11 A.M. she was already prepared for operation. There was at that time but little "bogginess" over the mastoid, but just over the linea temporalis there was some swelling, and pressure on this gave rise to pronounced dizziness. There was no abnormal temperature. Under chloroform the usual incision was made behind the auricle down to the bone, giving issue to a half-ounce of pus, which it was found came from a small opening near the linea temporalis and underneath the spot on the skin where pressure caused dizziness. This opening was enlarged with the chisel, and as it appeared from the exploration that there was extensive disease of the cavity, a new opening was made posterior to this and below, and the intervening bone chiselled away, making an opening 3 cm in diameter. The cavity was thoroughly cleaned out by means of a sharp spoon, until hard white bone was reached in every direction. When this was done, it was discovered that the dura was exposed at the posterior part, to the extent of  $\frac{1}{4}$  of a centimetre in all directions. The bony edge of this opening seemed healthy. A connection between the middle ear and the mastoid cavity could not be established. There was a large perforation of the *Mt.* Four small arteries had to be tied during the operation. The cavity was packed with iodoform gauze, the upper part of the wound united with three stitches and drainage established below.

The case pursued a normal course except that there was a sudden rise in temperature to  $104^{\circ}$  for a few hours on the third day after the operation. The next day it was normal and so continued. The wound was redressed and packed with iodoform gauze every third day for ten days, during which no pus was evident, either from the wound or the auditory canal. In fifteen days from the date of the operation the wound had healed over. The hearing in that ear two months after the operation was the same as on the other side, with a normal appearance of the membrana tympani.

One of the interesting features of this case is the absence of abnormal temperature in what might be considered an acute attack. It seems, however, hardly possible that the amount of bone destruction that was found should have been the result of a few days' inflammation. No doubt the process began in the mastoid coincidentally or very shortly after the middle-ear disease started. So long as the drainage



FIG. 1.

CASE II. Bezold's abscess before operation.

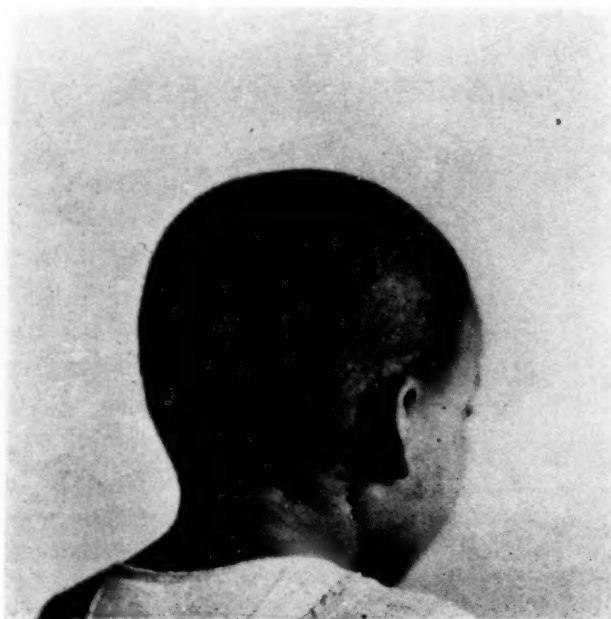


FIG. 2.

CASE II. Bezold's abscess after operation.





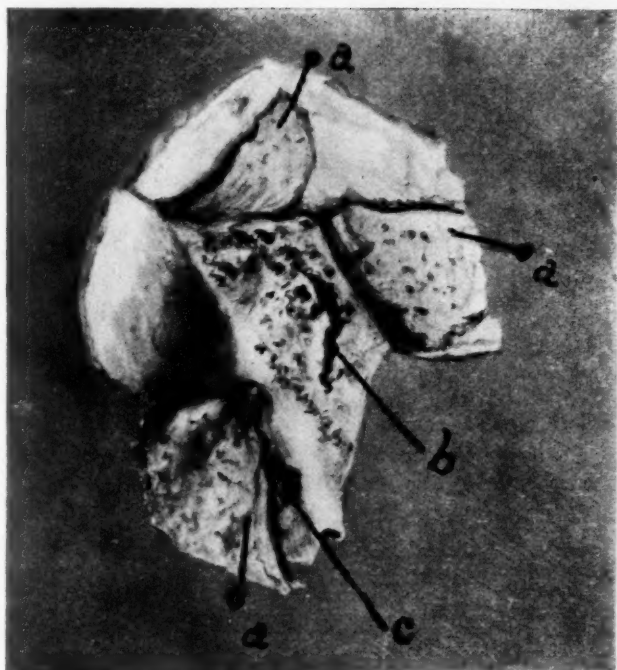


FIG. 3.

CASE VII. Upper internal surface of the temporal bone with the thickened dura mater held back by the pins *a, a, a*. *b* Perforation in the squamous portion. *c* Entrance of the auditory nerves. (From a photograph of the specimen.)

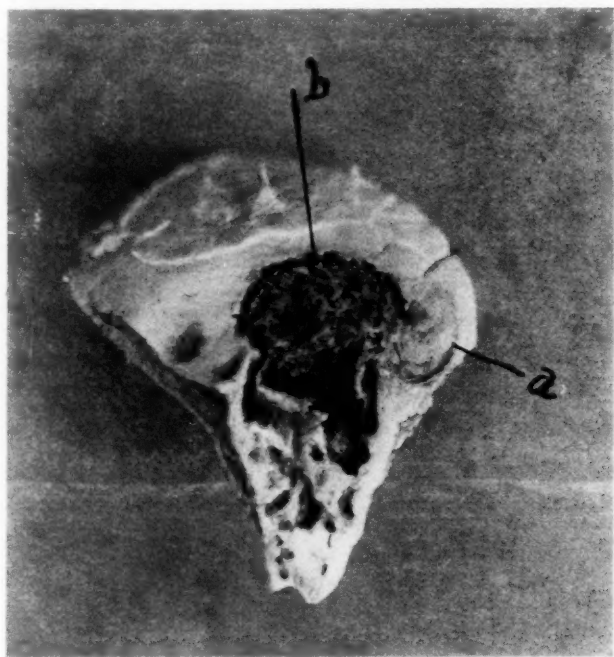


FIG. 4.

CASE VII. Inferior surface of the temporal bone showing destruction of lower wall of meatus and erosion of the bone to near the tip of the petrous portion. *a* The mastoid process. *b* Perforation of the squamous portion passing into the cranial cavity, corresponding to *b* in Fig. 3. (From a photograph of the specimen.)



into the middle ear was good, the acute symptoms were held in abeyance, but all the while the disease was making progress, to manifest itself violently when the drainage closed. In this way we are often deceived as to the age of a morbid process in the mastoid, and may be as to its very existence.

The dizziness complained of on pressure over the swelling may have been due to pressure on the dura, though it is possible that it may have been called up in the usual way by pressure on the contents of the labyrinth. The case also illustrates the tendency of cold applications to mask the symptoms while the process within the mastoid is going forward with perhaps increased activity. The increasing tendency among otologists now is to abandon cold for heat as application at every stage of the disease.

**CASE. 2.—Bezold's abscess in a white child of six years. No previous history of ear trouble. Cure.**

For the opportunity of seeing this case, I am indebted to Dr. A. R. Shands, who sent the patient, a well nourished and apparently perfectly healthy boy of six years, from the Newsboys' Home, where he had been an inmate for some ten days. The history at that time was, that about a week before his admission to the hospital, on the 7th of June, 1899, a swelling was noted below the ear on the right side of the neck, which gave rise to pain on movements of the head. Otherwise there was no complaint. There was no history of discharge or pain in either of the ears during his short stay in the Home, and, so far as was noticed, there was no defect in hearing. The swelling increasing rather rapidly in size, he was sent to the Emergency Hospital, when the condition was such as is shown in Fig. 1. The imperfectly defined tumor was fluctuating, and reached posteriorly to the edge of the trapezius muscle, anteriorly to the sterno-cleido-mastoideus, and below to near the clavicle. The auricle was not pushed forward nor outward, nor was there any bogginess over the upper mastoid region; no pain on pressure. Movements of the head alone gave rise to discomfort. Temperature only slightly above the normal.

The child was put under the influence of chloroform, and an incision made from the linea temporalis to the tip of the mastoid. The periosteum of the cortex was healthy and on removing it

the bone beneath showed no morbid change. An opening was made with the chisel into the mastoid cavity, which was found to contain some granulation matter, associated with much congestion of the bone. This was carefully removed with a sharp spoon, cleaning out the whole of the space to the tip, where an opening was found, through which, from pressure on the tumor below, pus issued in great quantity. The integument incision was then extended down along the edge of the sterno-cleido-mastoideus, laying bare the abscess cavity. The amount of pus evacuated was more than 3 oz. The soft tissues were found to be very much disorganized. The tip of the mastoid was in a state of necrosis, and in cleaning away the dead bone the occipital artery was severed as it passes in its groove beneath. It was promptly tied with a silk-worm gut ligature. Exploring the abscess cavity farther with the finger, a connection was discovered between this anterior abscess along the sterno-cleido-mastoideus, and another between the trapezius and the splenius muscles. This was opened by a counter puncture from behind and both cavities thoroughly cleaned of disorganized soft tissue. No communication could be established between the mastoid cavity and the middle ear. A perforated rubber drainage tube was introduced through the posterior opening, and passed up through the perforation in the tip, into the mastoid cavity. The primary incision behind the ear and over the sterno-mastoid abscess was closed with a sufficient number of stitches. The child recovered promptly from the anæsthetic, and there was no disturbance of a general character. The wound was irrigated through the tubes with an antiseptic solution every day for a week, during which time only a small quantity of pus came away. The tube was withdrawn at the end of a week, and the opening kept patent with a small teat of iodoform gauze. At the end of ten days more, complete healing had taken place and the parts presented the appearance shown in Fig. 2.

A perforation of the mastoid at its tip—the so-called Bezold's abscess—is very uncommon in infancy, or even in late childhood. Koerner says he has seen only a single case so young as six years. The external plate or cortex of the mastoid is so thin as compared with the cortex in adult life, that the natural tendency is for the pus to break through at any place rather than the comparatively denser tip, that

is, when the middle ear and mastoid cavity are the parts primarily affected. Cases such as this, however, lead us to suspect that there may be instances in which the tip is the seat of the primary lesion. We were not able to establish the fact of the existence of any antecedent affection of the ear whatever. During the child's residence at the Home nothing wrong was noted with the ears, and the grandmother, whom I sent for and questioned closely, affirmed that at no time, at least for the last three or four years, during which time the child had been daily under her observation, was there any complaint of the ears, either in the form of pain or discharge. I know how chary we should be of accepting such negative evidence as in any way conclusive, but the whole history of the case gives color to the opinion that there was a primary disease of the mastoid and especially at its tip. Koerner recognizes the possibility of such a condition, for he says at page 33 of his latest publication, *Die eitrigen Erkrankungen des Schläfenbeins*, "I have the distinct impression, as have also Lemcke, Eulenstein, and others, deduced from clinical experience and the operations performed very early in the disease, that the rapidly progressing necrosis of the interior of the mastoid, as I have seen it after influenza and in diabetics, may begin through a hematogenous infection of the bone first, and later pass over to the pneumatic cavities."

This question will come up again when we are considering some cases farther along in this report.

**CASE 3.—Suppuration of the mastoid in a white child of six months, following a discharge from the ear. Mastoid cavity opened and cleaned out. Recovery.**

Emily P., a white child of six months, was admitted to the Children's Hospital on June 17, 1899. Father and mother in good health, with no history of tuberculosis or syphilis. Ten days before admission a slight discharge was noticed coming from the left ear; very little pain was complained of. After two days the discharge ceased, and a swelling began behind the ear. The child nourished well and made little or no complaint. It presented the typical picture of post-aural abscesses in children. Large swelling behind and, above the auricle, the latter being



pushed forward and outward. The tumor was soft and fluctuating.

Under chloroform an incision was made liberating a large quantity of pus, estimated at one and one half ounces. The soft tissues were much infiltrated and disorganized. The cortex was smooth, but just over the antrum and back of it pus was seen issuing from several dark small points, evidently the defects in the cortex which are sometimes seen at that age, or the perforations through which blood-vessels pass. The wall was very thin and easily broken down under the chisel used as a gouge. The contents of the mastoid, which was larger than I expected in a child of that age, were scraped out with a sharp spoon. They consisted principally of granulation material and bone in a state of beginning necrosis. The cavity was packed with iodoform gauze, and the edges of the wound, after removing the disorganized soft tissue surrounding the abscess, were united with three stitches, leaving drainage below. June 20th : Dressing changed, no pus, no swelling over the mastoid, no abnormal temperature. The dressing was changed every other day for a week, when a simple outward application of aseptic gauze was used. The healing was rapid, with no further discharge of pus from either the wound or ear, and the patient was discharged from the hospital on June 9th, cured, three weeks after the operation.

This represents the simplest form of mastoid infection with which we have to deal—one from which a cure is often effected by a simple Wilde's incision, or even a spontaneous rupture of the post-auricular abscess. According to Koerner, a simple empyema of the antrum may find an outlet posteriorly through the fissura mastoideo-squamosa without leading to a destructive inflammation of the cells of the mastoid cavity. Still in any case that comes under observation it is safer to open the mastoid to get perfect drainage, if for nothing else.

**CASE 4.**—Suppuration of the mastoid in a white woman of sixty-four years, following grippe. No history of discharge from the ear. Operation five months after the onset of the disease. Exposure of the lateral sinus.

Mrs. F. M., white, aged sixty-four, was taken with the grippe during the latter part of February, 1899, and was in bed for two



weeks. On getting up she had pain in the right ear, but, according to her statement, there was never any discharge. The pain was persistent in spite of poultices and syringing the ear with hot water. About the 1st of July a swelling commenced to form behind the auricle. The swelling gradually enlarged, and this, with the still continuous pain, sent her to my clinic at the Emergency Hospital, where she was admitted to the ward on July 28th. On admission there was marked tenderness behind the auricle, particularly just above the meatus. The post-auricular swelling was considerable, but there was no fluctuation. Hearing for watch 0, and much impaired for voice.

After proper preparation the usual incision was made under ether. The post-auricular artery had to be tied. The periosteum was adherent to the bone. When pushed back and the bone exposed the cortex was found to be intact. An opening was made with the chisels opposite the antrum, and after a depth of  $\frac{1}{4}$  inch was reached, pus gushed out. The opening was then enlarged and the mastoid cavity cleared of a mass of granulation tissue and softened bone. The destruction has been specially great posteriorly. When the cavity was finally fully opened to inspection it was found that the descending branch of the lateral sinus was exposed for about  $\frac{3}{4}$  of an inch in its length and  $\frac{1}{2}$  of its breadth. It looked healthy and the bone surrounding it was clean and white. The destruction was also very great forward and over the meatus. A careful search failed to reveal any opening between the middle ear and the mastoid cavity. The wound behind the auricle was closed in the usual way, the cavity packed with iodoform gauze, with drainage below. The healing in this case was slow owing to the very debilitated condition of the patient. But little pus was found after the dressings, which were renewed every three or four days. At the end of four weeks the healing was perfect and the patient left the hospital.

This would seem to be another one of those cases where the affection of the mastoid was either primary or occurred very early after the onset of the middle-ear disease. This appears to be a characteristic of many cases of grippal origin. Considering the advanced age of the patient, her enfeebled state, and the exposure of the sinus to infection, probably for a long period, it is remarkable that the affection remained local.

**CASE 5.—Mastoiditis following grippe in a white woman of seventy-two. Evacuation of the mastoid cavity ; exposure of the descending portion of the lateral sinus.**

Mrs. Jane C., a white woman, seventy-two years of age, was brought to my clinic at the Emergency Hospital on August 29, 1899, with the history of having had grippe four months ago, at which time she also had trouble in the right ear. There was a slight discharge from the ear at the beginning, but this soon ceased. The pain, however, continued and was very severe. Three weeks ago she first noted a swelling behind the ear, which has gradually increased. A large fluctuating tumor is now found behind the auricle, pushing it forward and outward. The patient was admitted and, after due preparation, an incision was made into the swelling from the linea temporalis to the tip of the mastoid, giving exit to at least two ounces of pus. In order to get more room for work among the greatly swollen soft tissues, another incision was made at right angles to this, backwards. The mastoid surface was fully exposed. It was found to be denuded of periosteum, and a fistula about 2 *mm* in diameter was discovered just below the mastoid fossa. This was enlarged by chiselling until the whole of cortex, which was very thick, was removed for a space 3 *cm* square. The contents of the cavity were granulation tissue and soft bone. When the cavity was thoroughly cleaned, it was found that the descending portion of the lateral sinus was exposed for at least a half-inch of its length and fully one half its breadth. It appeared healthy, as did the bone around it. No connection could be established between the mastoid and the middle ear. The wound was dressed in the usual way. The temperature fluctuated a good deal, going sometimes as high as 100°, but there was nothing in the condition of the wound to account for it. The general condition of the patient was very bad, and that with her age (seventy-two years) made against her. However, under tonics and stimulants with good nourishment, she was able to leave the hospital at the end of three weeks with the wound entirely healed.

**CASE 6.—Extensive destruction, with sequestration, of both temporal bones in a negro girl of four years. Removal of all the diseased bone and posterior wall of the meatus. Recovery.**

Lillie Shaw, colored, aged four years, was first seen at my clinic at the Emergency Hospital on June 1, 1899, and ordered to the Children's Hospital for operation. She did not appear there,

however, for admission until June 13th. Both father and mother are living. No other children in the family. No definite history of tuberculosis or syphilis. The child has had none of the exanthemata of childhood and has been generally well except for a discharge from both ears, the beginning of which dates back two years. Its definite cause could not be elicited, but it probably began as an acute otitis media. One year ago a swelling made its appearance behind each ear and broke. The fistulæ have remained open ever since. Recently a piece of bone has been observed protruding from the fistula behind the right ear. Temperature normal. Child does not appear to suffer much.

Under chloroform, after proper preparation, the fistula on the right side was enlarged and a piece of loose bone taken away. It measured 1 cm in length and  $\frac{1}{2}$  cm in thickness. It was cancelled, but showed no traces of cochlea or semicircular canals. The cavity was thoroughly scraped and cleared of all granulation tissue and softened bone until hard white bone was reached in every direction. In doing this it was necessary to remove the posterior wall of the meatus completely. As no facial paralysis followed, it is evident that the facial nerve was not implicated either in the original disease or the very extensive curettement that was necessary for the thorough cleansing. The other side was treated in the same manner. It contained no sequestrum, but the destruction of bone was equally great, and in this also the posterior wall of the meatus had to be removed. No facial paralysis on this side either. The integumentary edges of the fistulæ on both sides were trimmed of cicatricial tissue and the wounds completely closed. The cavities were packed and drained from the meatus. The dressings were removed on the 17th, and no pus found; parts dry. The wounds back of the auricles had healed and the stitches were removed. The dressing through the meatus was continued for some ten days. There was then no discharge of any kind and child was sent home. The hearing was of course very much impaired. Some four months later the patient was readmitted for some eye trouble and the condition of the ears was found to be substantially as when she left the hospital.

As I wish to consider specially and collectively the cases of suppuration of the temporal bone as they occur in the negro race, I will add some other histories of such cases before taking up the subject as a whole.

**CASE 7.**—Long-continued and offensive discharge from left ear of a negro boy of two years. Death from diffuse meningitis. Three tumors found in the brain. Extensive necrosis of the temporal bone. Extradural abscess.

James Dent, colored, aged two years, was admitted to the Children's Hospital on September 1, 1899, with the following meagre history: Father and mother living and in good health. Two other children, both healthy. Child healthy until about a year ago, when he had an earache, followed by discharge. Both ears were affected at first, but the right soon ceased to discharge. The discharge in the left, however, continued and gradually increased both in the quantity and offensiveness of the pus. Up to a few days ago the child seemed to be healthy. It was then noted that it refused to eat and appeared listless and drowsy; and that was the condition on admission. The bowels were constipated. Urine normal. Temperature  $102^{\circ}$ . The tongue on protrusion was drawn to the right side and there were other evidences of a facial paralysis on the left side. How long that had existed could not be ascertained. When first seen by me on the 4th of September there was a profuse and most offensive discharge of thin pus from the left ear. There was, however, no swelling or sensitiveness over the mastoid. The temperature was ranging from  $102^{\circ}$  to  $103^{\circ}$ , and the patient was drowsy, taking notice of nothing. The pupils responded fairly well to light. In view of the conditions as they were afterwards developed, it is much to be regretted that circumstances did not allow of an ophthalmoscopic examination. The right ear presented nothing worthy of note. There being no symptoms of mastoid trouble, and drainage being apparently good, it was decided to watch the case for a day to see if anything would develop giving indications of a focal lesion that would warrant surgical interference.

It looked much like a phlebitis or brain abscess, and yet the symptoms warranting a definite operation were lacking. It was decided to await the developments of the next twenty-four hours. At the end of that time the temperature had somewhat subsided, but the drowsiness continued and there seemed to be a parietic condition of the left arm and leg. On hard pinching there was slight reactionary movement, not so pronounced, however, as on the other side. There was no external evidence of a phlebitis. It was decided to make an exploratory operation, in the hope of finding some indications for further procedure. When, however,



the patient was placed on the table on the morning of the 8th, he was so evidently moribund, with a pulse too rapid to count and a temperature of  $104.8^{\circ}$ , that it was decided to forego the operation and have an autopsy instead. The child was sent back to the ward, where, at the end of twenty-four hours more, it died, quietly and apparently from exhaustion.

The *autopsy* was made by Dr. W. B. French, in my presence and that of the resident physicians, twenty-four hours after death. Body emaciated, rigor mortis well marked. Abdominal cavity negative, except the retroperitoneal glands, which appeared slightly enlarged. Thoracic cavity: left lung contains a caseated tuberculous mass at the apex, with some old pleuritic adhesions. Heart normal. Cranial cavity: dura adherent to the skull in many places, but apparently not due to inflammation. The pia mater on the convexity was much injected, and there were numerous spots of fibrinous and fibro-purulent exudate on both sides. On lifting the brain from the floor of the skull after severing its connections, the base was found to be studded over with plaques of fibro-purulent exudation, more extensively than on the convexity, and these were particularly abundant about the medulla. They were more numerous on the left side, and varied in size from a pin-head to 4 mm in diameter. Tubercle of the miliary form was not found. There was no general effusion of pus or other liquid. The right side of the base of the skull presented nothing worthy of note. On the left side, however, over the temporal bone, the dura was elevated and appeared much thickened. On the inner surface there were two areas of small dot-like elevations, evidently deposits of fibrine. There was no pus on this surface. Pneumatic pressure through the external meatus lifted the dura from the bone beneath for nearly the whole extent of the internal surface of the temporal bone, but a connection between the two sides of the membrane could not be demonstrated. In fact this was rendered impossible from the great uniform thickening of the dura, which was at least six times that of its normal condition. On incision of the thickened dura, a quantity of pus was found lying beneath, on the surface of the bone, which was rough and in a state of necrosis. The whole of the temporal bone was removed for further examination. On section of the brain on the right side nothing abnormal was found. On the left side, however, three tumors were found in the brain substance: one imbedded in the centre of the

cerebellum, round, with a slightly nodulated surface and about one and a half inches in diameter ; another just above the third ventricle, also round, but smoother, with a diameter of one inch ; the third, still smaller, three quarters of an inch in diameter, in the middle of the frontal lobe, in the corpus callosum, above the septum lucidum. The brain substance around these tumors was very much softened for a distance of one half inch.

One of the tumors was examined microscopically at the Army Medical Museum, and it was reported to be tubercular. This feature of the case will be considered in greater detail in another article.

The temporal bone was examined after thorough cleansing, and its condition is shown in the accompanying figures, made from photographs, Fig. 3 representing the upper and Fig. 4 the under surface of the bone. As will be seen by examining Fig. 4, the lower wall of the meatus was entirely destroyed and the inferior surface of the petrous portion in a condition of necrosis almost to the tip. This necrosis was very marked on the external surface of the squamous portion above the auditory meatus, extending over an area reaching 2 *cm* on all sides. In this area there were points of perforation through the bone into the cranial cavity, and at the upper boundary these perforations, thickly set together, formed an arc of defect in the bone about 2 *cm* in length, as shown at *a* in Figs. 3 and 4. The glenoid cavity was not invaded. From the roof of the tympanum there were numerous small perforations into the cranial cavity, and the substance of the bone was thoroughly honeycombed. On the upper surface of the petrous portion there was much destruction, as shown in Fig. 3. The dura was elevated over the whole extent, except near the tip, and the bone was in a state of extensive necrosis, together with a condition of hyperostosis, the bone on this side being nearly a third larger than on the other. This hypertrophic process is often met with in connection with the destructive inflammations of the bones in negro children, a very pronounced instance of which is to be found in a case of "Double Exophthalmos with Ulcerative Destruction of the Eyes from Sarcoma of the Dura Mater," etc., which I reported and published in the *Trans. Amer. Ophth. Soc.* for 1897. The mastoid cavity was not opened, but there was no reason to suppose from its external surface, which was healthy, that it was involved to any serious extent. The lateral sinus was not implicated. It is evident from



the appearances found after death that no operative procedure, either upon the temporal bone or the brain, would have been of any avail in averting a lethal termination of the process. It is not clear that the presence of the tumors in the brain has any connection with the suppurative inflammation of the bone, though it is noteworthy that all three were found on the left (affected) side.

As pertinent in this connection I will relate the history of another case of extensive necrosis of both temporal bones in a negro child.

**CASE 8.—Extensive necrosis of both temporal bones with many sequestra in a negro child. Three operations for relief in three years. Dura mater exposed. Cured.**

Cora Burrell, colored, aged three years, was admitted to the Children's Hospital on 21st of December, 1891. Father died of rheumatism. Mother living, in good health. There are other children alive. The child appears fairly well nourished and has no other complaint than a discharge from both ears and from fistulæ behind the auricles, which are said to have existed for a year or more. When crying, the mouth is turned toward the left side. The discharge is very offensive. No definite history of its commencement. On December 31st the child was put under the influence of chloroform, the fistulæ behind the ears enlarged, and all the granulation material and diseased bone scraped out with a sharp spoon, until what seemed healthy bone was reached in all directions. On both sides a defect in the bone exposed the dura mater for more than two centimetres square,—at a point about 4 *cm* backward from the auditory canal. The cavities were packed with iodoform gauze and the wounds closed, leaving drainage at the lowest part. The case progressed well until the 17th of January, 1892, when the child broke out with the chicken-pox. The fistulæ behind the ears never fully healed, and there were frequent outbreaks of discharge. On the 27th of April the patient was again put under the influence of chloroform, the sinuses opened, and more granulation material and diseased bone removed. There were a number of bone sequestra removed from both sides at this time. Most of those were small and contained nothing recognizable as parts of the structure of the labyrinth. In the midst of the operation the child's breathing and pulse stopped for more than a minute. It was resuscitated by holding it

up by its feet, together with injections of nitro-glycerine. On recovery, the operation was continued to completion. After this second apparently thorough curettement the discharge from ears and fistulæ ceased for a time. On the 20th of June diphtheria developed. On convalescence from this the discharge from both fistulæ again set in with renewed vigor. It was, however, not brought back to the hospital until January, 1894, just three years after the first operation, for another effort to eradicate the disease. The child during all this period had been given tonics and the

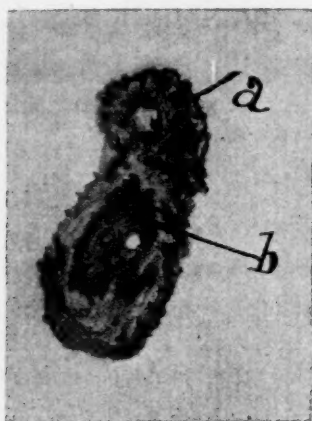


FIG. 5.

A sequestrum from Case 8, showing what is presumed to be the remnants of the vestibule (*b*), and a semicircular canal (*a*)  $\frac{1}{2}$  larger than natural.

nutrition attended to as well as possible. On the 24th of that month it was again placed on the operating table, the parts behind the ears freely opened up, and all the diseased tissue that could be discovered removed. Again the respiration and pulse ceased during the operation, but the same methods employed before brought about resuscitation. At this time a considerable number of small sequestra were removed, and on the left side one large one, 2 cm long and 1 cm thick, which evidently came from the petrous portion. The individual parts could not all be identified, but the general appearance was that of the vestibule with at least one semicircular canal (Fig. 5). From the amount of material removed at these three several operations it hardly seemed possible that any of the temporal bone, particularly of the petrous portion, remained. The facial, on the left side, had long ago succumbed to the destructive process; in some mysterious

manner it escaped on the right side. At no period during the long continuance of the disease did the child seem to suffer from vertigo or from anything that could be referred to affection of the semicircular canals. This last endeavor seemed to be crowned with success, for the patient left the hospital on the 7th of March, 1894, with no discharge. There seemed to be some little hearing power left.

The case whose history follows I did not see during life, for the reason that there were no aural symptoms of sufficient gravity to have my attention called to them. It was only in the dead-house that the temporal-bone disease was revealed.

**CASE 9.—Meningitis in a negro child of four years, with no symptoms during life of any aural disease. Extensive necrosis of the mastoid and temporal bone with extradural abscess found on autopsy.**

Sarah West, colored, aged four, was admitted to the Children's Hospital on January 20, 1899. Father and mother both living and in good health, as are likewise their three other children. Has never been ill before. Was taken suddenly this morning with vomiting and pain in the abdomen. On admission there was anorexia and pain in the frontal region; child irritable and restless, tossing from one side of the bed to the other; eyes kept half closed; pupils rather larger than normal; brows and muscles of the upper part of the face contracted; much muscular soreness complained of. Lungs and heart and urine normal. Temperature  $103^{\circ}$ ; pulse 104. During the night the temperature ran up to  $104^{\circ}$ ; patient restless and delirious at times. Put on milk diet, and sod. brom. ordered. January 20th: Temperature irregular, ranging from  $99^{\circ}$  to  $102^{\circ}$ ; delirious at night; slight retraction of head. There is a painful area over each of the mastoid processes, but no swelling. 24th: Temperature irregular, restless, and cries out and objects to being moved. 26th: Quieter, temperature coming down, sleeps better; takes and retains nourishment. 28th: Generally better; a few fine crackles and râles heard over the inframammary region on right side, and slight dullness on percussion there. Pneumonia jacket applied. 30th: Temperature up again; somewhat restless. February 1st: Did not sleep so well and had an attack of screaming; subsultus tendinum. 5th: Temperature  $102^{\circ}$  to  $104^{\circ}$ . 7th: Getting weaker,

otherwise the same. 9th : Very restless and nervous. At 9 P.M. a slight convulsion ; temperature  $100^{\circ}$  to  $102^{\circ}$ . 13th : respiration slow and irregular, pupils dilated, pulse slow and irregular ; purulent discharge from nose. 15th : Respirations irregular, is somnolent, and has muscular twitchings. 18th : Gradually declining, will not take nourishment, pulse rapid and irregular, respiration slow and irregular with frequent sighings. 22d : Been growing weaker since last report. Died at 10 P.M.

*Post-mortem* made eighteen hours after death. Body much emaciated. Liver, spleen, and kidney somewhat congested. No ulcers in intestines ; retroperitoneal and mesenteric glands somewhat enlarged. Lungs congested, with slight pleuritic adhesions on both sides ; no tubercular deposits or solidification. Heart and vessels normal. Cranial cavity : meninges and brain vessels full of blood. On the convexity there were many plaques of fibro-purulent exudation, and a large amount of yellow fluid was found at the base. On the base of the brain there were many fibro-purulent exudations, particularly at the pons, medulla, and base of the cerebellum. On the left side the petrous portion of the temporal bone and the mastoid cells were necrosed, in a honey-combed condition, and filled with pus. Under the dura mater at this place there was a large accumulation of pus, but no communication could be established between this and the brain.

CASE 10.—*Mastoiditis in a negro child of fifteen months, following a discharge from the ear. Mastoid opened and cleaned out. Cured.*

Winnie Graves, colored, aged fifteen months, was admitted to the clinic at the Emergency Hospital, on September 12, 1899, with the history that four weeks before the mother had first noted a discharge from the right ear, unaccompanied, however, by pain or any complaint on the part of the child. A week ago a swelling was noticed behind the ear, which has gradually increased in size. Temperature on admission,  $97^{\circ}$ . A large fluctuating tumor was found behind and above the right ear, pushing the auricle outward and forward. There was a slight discharge from the external ear. After proper preparation the usual incision was made from the linea temporalis to the mastoid tip, giving exit to about an ounce of pus. Soft parts were much thickened and the



connective tissue disorganized. The mastoid was denuded of periosteum, and near the fossula mastoidea a dark spot was discovered, gentle pressure on which with a probe gave issue to a quantity of pus. This opening was enlarged with a hand chisel and the contents of the mastoid cavity, consisting of granulation material and soft red bone, removed with a sharp spoon. The antrum was carefully cleaned, and water injected into the external auditory canal came out at the mastoid opening, one syringe-full bringing with it the incus, which was found upon examination to be healthy. No other ossicle was thus removed. The case was dressed as usual, with packing of iodoform gauze, with drainage at the most dependent part. The case progressed well, with the slight fluctuations in temperature common in children. It left the hospital at the end of a week, returning for redressing at the out-door department. In two weeks the wound behind the ear had healed, but there was still some discharge from the ear. Under antiseptic syringing this ceased in ten days more.

I have grouped together these cases among negro children for the purpose of offering some comments on *diseases of the temporal bone in the negro*. Many years ago I reported upon the relative frequency of ear diseases in the white and colored races in the United States (ARCHIVES OF OTOTOLOGY, vol. xvi., No 4, 1887), and I there stated that in my experience the affection of the middle ear, known as sclerosis or dry catarrh, was much less common among the negroes than among the whites. This referred particularly to the adult. Furthermore, my added experience has shown me that suppurative diseases of the temporal bone are also very uncommon among negro adults. *I have never seen a case of mastoiditis in an adult negro.*<sup>1</sup> This is by no means the case, however, with the negro in infancy and childhood. Negro children are very subject to diseases of the bones, particularly in the form usually called "tubercular." The records

<sup>1</sup> In a discussion of this paper when it was read before the Medical Society of the District of Columbia, in December, 1899, only one surgeon practising otology reported that he had ever seen a case of mastoid disease in the adult negro. I have made further inquiry among the otologists of Washington on this point, and there seems to be a unanimous opinion as to the great rarity of the disease in the adults of that race. My own experience covers a period of more than twenty years, in a clinic composed two-thirds of the colored race, and several other hospitals in which negroes are treated.

of the Children's Hospital, in this city, show this abundantly. Not only this, but suppurative disease of the bones when once established is very difficult to eradicate, and relapses are frequent. The negro child is, almost without exception, badly nourished, and nearly always "scrofulous." It would not perhaps be safe to say that in every case this means tuberculosis in a demonstrable form in some organ, though few autopsies show its absence, but the power of resistance is much reduced and recuperation sluggish. Whether all cases of temporal-bone suppuration in these children start in middle-ear inflammation is doubtful in the face of the history of Case 9, where there was no evidence or previous history of an ear trouble of any kind, except a slight tenderness over both mastoids in an extremely hypersensitive patient. There seems at any rate to be a strong predisposition among them to take on suppurative disease in these bones on slight provocation, and, it is possible, idiopathically.



## EXCESSIVE HEMORRHAGE, FOLLOWING THE REMOVAL OF A MYXO-FIBROMA FROM EAR.

BY CLARENCE R. DUFOUR, PHAR.D., M.D., WASHINGTON, D. C.

*(With a figure in the text.)*

Mrs. B., aged about fifty years, married, the mother of several children, consulted me in regard to her ear. She said that it was very sore and painful and that something was growing out of it. She gave a history of suppurative otitis media of many years' standing. Upon examination I found the external canal completely filled by a polyp which protruded from it. There was an abscess on and around the tragus which was so painful that the ear could not be handled even in the gentlest manner. I advised an operation for the removal of the polyp, to which she consented, and which she wanted performed at her home.

The following day, with the aid of an assistant, I proceeded to remove it by means of the snare. Though very painful on account of the abscess, I succeeded in getting the wire well down on the growth. It was a matter entirely of touch in doing so, for the canal was so occluded that no part of it or the polyp could be seen below the external meatus. Upon attempting to cut through it I found it could not be done, so I removed it by torsion; it came away in its entirety and was followed by a severe arterial hemorrhage; the blood welled up and overflowed the canal. I used hot water to check it, but it had no effect. I found that by compressing the carotid artery in the neck the hemorrhage would entirely cease. I made pressure in this manner for some time, but as soon as it was removed the hemorrhage returned. I packed the canal as well I as could with absorbent cotton; the intense pain

of the abscess caused her to resist any treatment directed to the ear. The blood soon found its way through the cotton and flowed out of the canal. The family began to be alarmed, and it looked as if the carotid artery would have to be tied in the neck. I assured them that the hemorrhage could be stopped in that manner, but before resorting to it I would put the patient under chloroform and pack the ear firmly with gauze. To this she consented, so under the effects of the anæsthetic I packed as firmly as I could the entire canal with iodoform gauze, using several pieces. This stopped the hemorrhage. In four days I removed the gauze and there was no return of the hemorrhage.

The growth proved to be a myxo-fibroma with attachment (*a*) in the middle ear.



My theory of the cause of the hemorrhage is that the growth involved the small branch of the internal carotid artery which is distributed to the floor of the middle ear, that the walls of the artery partook of the fibrous character of the growth, and when the latter was removed the walls of the vessels gaped instead of closing. The pressure from the growth being removed, the abscess on the tragus soon healed. The discharge from the ear ceased under about two weeks' treatment. For a short time I used antiseptic washes, then as the discharge diminished I changed to the dry treatment. When last seen the patient was entirely free from the discharge from the ear.

## FACIAL PARALYSIS AS A COMPLICATION OF ACUTE OTITIS MEDIA.

BY WILLIAM R. MURRAY, PH.B., M.D., MINNEAPOLIS, MINN.

THE following cases are cited as showing that out of 258 cases of acute otitis media, presenting themselves at the Illinois Eye and Ear Infirmary, during the year of the writer's service as resident surgeon, the above complication was present in two of the cases.

CASE 1.—Patient, H. W., male, æt. thirty-four, occupation soap-maker. Family and personal history good, previous general health good.

Patient entered the hospital February 10, 1898, with the following history : Four days previously he had received a kick on the left ear, followed by acute pain, which persisted until rupture of the drumhead occurred, paralysis of the corresponding side of the face occurring at that time. On examination there was found rupture of the left memb. tympani with slight purulent discharge from the middle ear, and paralysis of the peripheral branches of the seventh nerve, angle of mouth drawn markedly towards the opposite side, left cheek flaccid, patient unable to protrude the tongue in the median line, unable to close left eyelids. Patient put on tonic treatment, iron, quinine, and strychnine, antiseptic treatment of the middle ear, and faradism to the paralyzed muscles. Treatment was followed by rapid improvement, discharge from ear ceased in a few days, and at the end of six weeks there was a disappearance of all signs of facial paralysis.

CASE 2.—Patient, G. C., male, æt. fourteen, schoolboy, entered the hospital February 25, 1898, with the following history : Three

weeks previously the patient had had a severe attack of earache in left ear, accompanied, shortly after the onset of the attack, by a facial paralysis of left side. This was followed by rupture of the drumhead and discharge from the left ear. Three weeks later he appeared at the hospital, and on examination there was found an acute purulent otitis media, with slight discharge from the middle ear, and a partial paralysis of the facial muscles supplied by the seventh nerve on the left side. Patient put upon the usual antiseptic and tonic treatment, with application of the electric current to the paralyzed muscles. This was followed by cessation of the discharge, restoration of the drumhead, and disappearance of the facial paralysis.

LAKE, R. (*J. Laryng., Rhin., and Otol.*, London, 1895, vol. ix., p. 337), in his article on "Facial Paralysis in Recent Otitis Media," reports 4 cases of facial paralysis out of a series of 658 cases of purulent otitis media.

BUCK (*Manual of Diseases of the Ear*, 1895, p. 31) states that the lesion is usually in the Fallopian canal just above the oval window, the bony canal being often imperfect at this point, and when it occurs in the course of an acute otitis media the nerve probably stands in an abnormally close relationship to the tympanic mucous membrane, or the surrounding shell of bone may be defective at some point.

POLITZER, A. (*Diseases of the Ear*, p. 450), gives the results of facial paralysis as: 1. Complete recovery in those cases in which the inflammation, which has extended to the facial nerve, is fully resolved. 2. Persistent paralysis of the whole nerve, or of some of its branches, when by thickening and retraction of the neurilemma, the conducting power of the nerve is impaired, or when the individual nerve bundles have their function destroyed by ulceration, induration, or fatty degeneration.

Tracing the course of the facial nerve, from its deep origin in the floor of the fourth ventricle, it passes forward and outward on the middle peduncle of the cerebellum, and enters the internal auditory canal, thence passes through the aquæductus Fallopii, and emerges at the stylo-mastoid foramen, just beneath the lobe of the ear, and supplies most of the muscles of the face.

During its passage through the Fallopian canal the anatomical position of the nerve accounts for the somewhat unusual complication of facial paralysis attending an otitis media, and, when present in an acute catarrhal case, is due to the direct extension of the inflammatory process to the nerve sheath, which, lying within the unyielding bony walls of the Fallopian canal, may be subjected to sufficient pressure, from the swelling attending a slight inflammation of the nerve sheath, to interfere, partly or completely, with the functions of the nerve, and is probably due to some abnormality of the bony structure surrounding the nerve, probably in the neighborhood of the fenestra ovalis, in the internal wall of the tympanum, where the canal turns from its horizontal course, and passes downwards to its exit at the stylo-mastoid foramen.



## THE RINNÉ AND GELLÉ TESTS.

BY DR. GUSTAV BRÜHL,

ASSISTANT AT THE UNIVERSITY EAR CLINIC, FREIBURG I. B.

Translated and Abridged from Band xxxii., S. 44, 1898, by Dr. J. GUTTMAN.

### I.—THE RINNÉ TEST.

AS a result of his observations, Rinné concluded that normally the sound of a tuning-fork held in front of the ear can be heard distinctly even after it can no longer be heard when placed on the upper incisor teeth. This phenomenon (positive Rinné), he asserts, is also to be observed in cases of nervous deafness. But, on the other hand, in case of impairment in the sound-conducting apparatus, the sound of the tuning-fork placed on the cranial bones can be heard just as long as, or even longer than, by air-conduction (negative Rinné).

Numerous experimenters confirm or deny the utility of the Rinné test. Whereas Burkhardt-Merian finds the Rinné test of no value, inasmuch as he found Rinné positive in 29 per cent. of stapes ankylosis, Politzer regards the test as of great assistance in diagnosis, although the results may differ when testing with two different tuning-forks, with forks with or without clamps at the upper ends; the test may be positive even in cases of unquestionable peripheric affections. Brunner invariably diagnoses disease of the sound-conducting apparatus when he finds Rinné negative. Schwabach found the test positive in 43 per cent. of cases of disease of the sound-conducting apparatus, and therefore regards the test as worthless if we obtain different results with two



tuning-forks. According to Rohrer's statistics, Rinné is positive in 40 per cent. of labyrinth affections ; negative in 63.3 per cent. of severe middle-ear disease. Eitelberg attaches little importance to the Rinné test alone. Barr also found Rinné negative in 63 per cent. of disease of the sound-conducting apparatus. Gruber and Urbantschitsch regard the Rinné test as non-conclusive, and Urbantschitsch believes that the result of the test depends upon where the tuning-fork is placed, and that contrary results are obtained at different times. Bürkner advises the controlling of the Rinné test by reversing the procedure, by placing the tuning-fork on the mastoid process when it can no longer be heard in front of the ear, and if the results of the experiments agree, he considers the test of diagnostic value. In opposition to Gradenigo, who considers the Rinné test of unquestionable diagnostic value, Jacobson denies the value of tuning-fork tests in general, with the exception of good perception of the low notes and poor perception of the high notes in affections of the labyrinth and the symptom of incorrect hearing.

According to Steinbrügge the prolongation of bone-conduction is due to a hyperæsthesia of the auditory nerve.

A decided advance in the matter of the Rinné test was brought about by the investigation of Bezold. The measurement of the time in seconds, with which the air-conduction exceeds the bone-conduction, or *vice versa*, and above all the performance of the Rinné test not with one tuning-fork alone, but with several forks, especially with low notes, are of the greatest importance. According to Bezold, the positive Rinné is more reliable the lower we descend in the scale, and similarly the negative also approaches the extreme —  $\theta$  (the tone is only heard from the bone) as we test with increasing lower notes. The greater the impairment of the sound-conduction the more decided is the negative Rinné—*i. e.*, air-conduction for the deeper notes is entirely lacking in these cases and for the higher notes the bone-conduction is even greater.

All examinations that are made without a due consideration of the results of Bezold's observations are valueless, and all records in which the Rinné test was made with only one

tuning-fork are of no service in deciding the diagnostic value of the Rinné test. The examination of a slightly deaf person with the fork  $c^2$  may give us a positive Rinné, whereas examination with  $c^1$  may give a negative Rinné, and with  $C$  or  $C^1$  an absolutely negative Rinné. The expression "negative or positive Rinné" is therefore of no value unless accompanied with the statement of the fork used in the examination.

The dependence of the result of the Rinné test on the form, the location of the application, and the concussion of the tuning-fork does not here come into consideration.

While the result of the Rinné test is always the same when it is found positive for the lowest tones, for in this case it is positive for the higher tones also, it may vary when Rinné's test is found negative for some tones of the scale. The test with one tuning-fork of a lower octave may show a preponderance of bone-conduction, a tuning-fork of a still lower tone may show the entire absence of air-conduction, while the test with a higher octave may show the preponderance of air-conduction.

The different phases of the Rinné test may be summed up as follows:

1. Positive Rinné, *i. e.*, Rinné is positive for the deepest tones and hence for all tones.

2. Negative Rinné. (a) Total negative Rinné, *i. e.*, Rinné is negative for all tones that can be tested (to  $c^1$  inclusive).

(b) Partial negative Rinné, *i. e.*, Rinné is positive for the higher notes and negative only for the low notes (Rinné partly negative to  $c^1$ , *i. e.*, Rinné is negative for all tuning-forks to  $c^1$  exclusively).

(c) Absolute negative Rinné, *i. e.*, for the lowest notes the air-conduction is entirely absent ( $-S$ ), yet Rinné may be wholly or partly negative,

Whereas in the well-known procedures which effect a change of pressure in the middle ear, as closure of the auditory meatus with the finger, Valsalva's experiment, aspiration test, the Rinné test remains positive, it becomes partly negative in the following experiment:

*Experiment I.*

With a hand bulb we compress the air in the external auditory canal of a person having normal hearing power, and perform the Rinne test during this compression by placing the tuning-fork on the mastoid process, and when the sound has ceased we place the fork on the tube leading to the ear. We find then that Rinne becomes negative for A' and C, whereas it remains positive for c, and that with the cessation of the compression Rinne again becomes positive for A' and C.

That the order of the procedure in this test is not the cause of the result obtained is shown by the fact that the air- and bone-conduction remain normal when the bulb is not compressed. Just as we succeed in producing experimentally through a slight influence on the middle ear a negative Rinne, so we find clinically Rinne only partially negative, for the deeper notes only, in cases in which, judging from the slight impairment of hearing, we presume that there is but a mild affection of the sound-conducting apparatus. On the other hand, in the worst forms of deafness not following secretory disease of the middle ear, as is shown in stapes ankylosis, we find Rinne mostly absolutely and totally negative. The Rinne test may therefore be useful not only for the diagnosis of middle-ear affections but also to enable us to estimate the severity of the disease.

The result of the Rinne test is often modified by the fact that in addition to the middle-ear disease there exists an affection of the auditory nerve-apparatus.

*II.—GELLÉ'S TEST.*

It is of practical importance to possess different modes of diagnosis by which the result of any test may be verified and completed. Were all ear diseases located in the middle ear or in the labyrinth, one method of examination would enable us to make a diagnosis. But considering the various combinations of pathologic conditions encountered in ear disease, it becomes necessary to avail ourselves of the Weber test, and of Schwabach's test, the examination of the perception of the higher notes. By far the most valuable

aid to the completion of the Rinné test we must consider the test of centripetal pressure, as recommended by Gellé, for the results of these two tests very often agree.

Although Gellé, as early as 1881, devised a method for the determination of the mobility of the stapes in the foramen ovale, nevertheless this easily accomplished test is not yet commonly employed. His test is as follows: A sounding tuning-fork is placed on one of the cranial bones while the air in the external auditory canal is compressed with a hand bulb. If the intensity of the sound becomes diminished, the stapes is movable (positive Gellé); but if the sound is unchanged, the stapes is immobile (negative Gellé). Rohrer was the first to appreciate the value of the Gellé test and to utilize it. He regarded it of service in differentiating primary and secondary affections of the labyrinth, and also utilized it for the purpose of controlling the Rinné test. He found Rinné positive in 92 % of cases where Gellé was positive, and negative in 45 % where Gellé was negative. The tuning-fork used by him was  $\bar{c}$  (512 d. v.). Gruber simply mentions the test in his text-book. Bezold regards the result as due to the mode of procedure, which he does not regard of any value either for diagnosis or for the theory of expansion for the explanation of the improved bone-conduction in anomalies of the sound-conducting apparatus. It cannot be understood why Bezold does not regard the Gellé test as a test for the air-conduction, inasmuch as the sound of the tuning-fork placed on the hand bulb can be heard only so long as the tube, which leads to the ear, remains open.

Hartman considers the Gellé test as an extension of Weber's test, and like Bürkner denies any diagnostic value to it, especially after the researches of Politzer and Bezold. The most complete work on the method of the centripetal pressure comes from Bloch; he contradicts Bezold's objections, and on the strength of his researches arrives at the conclusion that the positive Gellé which is normally obtained is due to the impairment of the mobility of the sound-conducting apparatus caused by the compression; with a movable tympanic membrane the negative result indicates a



fixation of the stapes. Urged by Rohrer, Argentowsky compiles the results of Rinne's and Gellé's tests. By positive Rinne he found Gellé positive in 58.9 %; by negative Rinne he found Gellé negative in 77.9 %; similarly to Gellé and Bloch he also considers the negative result of the centripetal pressure, when the tympanic membrane is movable, as due to immobility of the stapes.

Gellé, Jr., worked up the experiments of his father in his dissertation. We are interested only in his appeal that we control the Rinne test only by the Gellé test. According to him, a negative Gellé with a negative Rinne indicates an immobility of the stapes, whereas a positive Gellé indicates that the stapes is still mobile; with a positive Rinne a negative Gellé indicates a fixation of the stapes in addition to an affection of the labyrinth. The examinations were made with the tuning-fork at I (=C). Panse refers to these tests in his recent paper, but does not express an opinion as to the value of these researches. In Bezold's latest publication on *The Functional Examination of the Human Hearing Apparatus*, we find nothing about Gellé's test beyond a mention of Bloch's researches.

Although we do not wish to enter into any physiological discussion, we wish to make some remarks concerning Gellé's test.

According to the researches of Politzer, Lucae, and Bezold, the entire sound-conducting chain moves inward from the tympanic membrane towards the stapes as a result of a positive pressure produced in the external ear. If the sound of a tuning-fork is transmitted through a bone of a section of the auditory apparatus, from which the tegmen tympani has been broken away, and if by means of a lever placed on the head of the hammer a waving curve be described, we note that the amplitude of the curve becomes smaller in proportion to the increase of pressure.

It is obvious that a sound transmitted through a bony path diminishes in its intensity if any part of this path suffers some impairment in its capacity of wave transmission, as is the case when the air is compressed in the outer ear. But if the mobility of the sound-conducting chain is modified by



fixation or ankylosis of the stapes in the oval window, the impaired wave transmission produced externally by the compression is without any influence on the intensity of the sound of the tuning-fork transmitted through the bone, so that it is heard undiminished.

The following experiment will serve to show how a modification in the mobility of the sound-conducting chain is produced in the normal ear by compression from without and by fixation of the stapes.

#### *Experiment II.*

The tegmen tympani of a human auditory apparatus is broken away, the vestibule is exposed in such a manner that the stapes lies free, and a glass thread, 8 *cm* long, is attached to the hammer. If an angular measure is attached to the bone so that the thread may be placed at the point marked  $90^\circ$ , the oscillations of the head of the hammer may be read off in degrees. By means of a Politzer bag into which a hole has been burned we produce a pressure of 5–10 *mm* Hg., measured by a manometer, as it is employed in the Gellé test for the purpose of diminishing the intensity of the sound.

The angle formed by the thread during the compression is  $5^\circ$ ; after the cessation of the compression  $15^\circ$ . If now the stapes be fixed behind by means of sealing wax in the oval fenestra, the mobility of the thread is diminished about  $\frac{1}{2}$  during the compression. If the hole in the Politzer bag be left open during the compression, no motion is manifest.

The following experiment of Bloch demonstrates that the cause of the diminution in the sound of the tuning-fork in Gellé's test is due to the impaired mobility of the sound-conducting apparatus and not to a change in the labyrinth pressure, as was believed by Gellé.

#### *Experiment III.*

If the normal ear of a living human being is kept under a higher pressure (to 25 *mm* Hg.) for some time by means of compression in the outer ear, no signs of increased pressure in the labyrinth—as dizziness, subjective noises—appear. From this we conclude that the fluid in the labyrinth

which was displaced by the inward movement of the stapes must find its immediate outlet into the aqueduct, so that the increased pressure in the labyrinth produced by the compression is immediately compensated. If the change in the labyrinth pressure were the cause of the diminution in the intensity of the sound of the tuning-fork, transmitted from without through the bony path, then an increase in the intensity of the sounds would have to be observed after the decrease of the sound in the beginning of the compression which results from a compression of longer duration and a proportional sound transmission, for from Experiment III. we see that a compensation in the labyrinth pressure takes place immediately.

#### *Experiment IV.*

The handle of an electric tuning-fork c (128 d. v.) is connected with the teeth of the upper maxilla by means of a piece of wood; as often as a compression (10 mm Hg.) is produced in the external canal, the intensity of the sound becomes diminished. If the pressure is kept up continuously (two minutes), the diminution in the sound can be observed only at the beginning; during which time the sound remains equally weak both for myself and a colleague, and increases only after the compression ceases.

There can therefore be no doubt that the centripetal pressure in cases of mobile drum can give no information concerning the mobility or immobility of the stapes; this confirms the value of this test.

It is evident that the test furnishes no information concerning the anatomical type of the fixation of the stapes; we must have other means of ascertaining this. Successful inflations of the middle ear will indicate that we are not dealing with a stapes ankylosis, and if Gellé's test becomes positive during our treatment, it will indicate that the fixation of the stapes was not absolute and indissoluble. All in all we may regard the Gellé test as a means by which we can learn the condition of one of the most important parts of the sound-conducting apparatus, the fenestra ovalis.

## III.—THE RINNÉ AND GELLÉ TESTS.

From exact functional examinations of a great number of patients in our clinic who were afflicted with a high degree of deafness, most of them in both ears, whose tympanic membranes showed a more or less negative picture,—which consequently furnished no information as to the nature of the auditory affection,—and in whom the employment of Politzerization through normally patent Eustachian tubes caused no improvement, we concluded that the Rinné and Gellé tests show a certain regularity in their result. With Gellé's test and Bezold's method of performing the Rinné test, we are enabled to ascertain the primary and most important seat of the pathological changes, even in difficult cases of differential diagnosis, with as great a precision as is possible without the control of a post-mortem.

If we make the Rinné examinations, as we invariably do in our clinic, with  $A^1$ ,  $C$ ,  $c$ ,  $c^1$ ,  $c^2$ , and the Gellé test with the  $d^1$  tuning-fork according to Bloch's precautions, we get the following results:

1. If Rinné is positive for  $A^1$ ,—and hence also for all higher notes on the scale,—it is also positive for Gellé.

2. If Rinné is negative for  $A^1$  or  $\pm 0$ , but for  $C \pm 0$  or positive (hence Rinné partly negative to  $C$ ), Gellé is positive.

3. If Rinné is totally negative (and then usually also absolutely), *i. e.*,  $A^1 - 9$  and  $c^2$  still negative, or if Rinné is  $- 9$  for  $A^1$  and for  $c^1$  still negative, but positive for  $c^2$  (hence Rinné absolutely and partially negative to  $c^2$ ), then Gellé is negative.

4. If Rinné is  $- 9$  for  $A^1$  or negative, and for  $c$  also negative, but for  $c^1$  positive (hence partially negative to  $c^1$ ), then Gellé is usually negative.

5. If Rinné is  $- 9$  for  $A^1$  or negative, but for  $c \pm 0$ , or positive (hence partially negative to  $c$ ), then Gellé is positive or negative.

That the Gellé test remains positive in cases in which the Rinné test is negative for low notes, finds its explanation in the fact that Rinné becomes partly negative (*i. e.*, for the

lowest notes) in cases of slight affection of the sound-conducting apparatus with only slight impairment of the hearing power. The Gellé test (which in case of a movable *membrana tympani* tells us only whether the stapes is movable or not) remains positive in spite of the fact that a pathologic condition exists in the middle ear; it becomes negative only when the stapes is ankylosed; if this stapes ankylosis cannot be gotten rid of by our therapeutic measures, *e. g.*, the air douche, etc., it remains constantly negative, just as the Rinne test constantly remains absolutely and almost totally negative in these cases of stapes ankylosis.

Summing up the conclusions of our observations once more we arrive at the following important diagnostic facts:

1. If the Rinne test is positive, then Gellé is also unexceptionally positive, and the impaired hearing is due to nervous affections.

2. If the Rinne test is negative absolutely and totally or up to  $c'$ , the Gellé test is unexceptionally negative, and the impaired hearing is due to a stapes ankylosis.

3. If the Rinne test is negative below or up to the  $c$  limit, and positive above it, then the Gellé test decides whether a stapes ankylosis exists or not.

## A METHOD FOR THE FUNCTIONAL EXAMINATION OF DISEASED EARS.

BY PROFESSOR FR. BEZOLD, MUNICH.

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### A PRESENTATION OF THE VARIOUS METHODS FOR TESTING THE HEARING FUNCTION OF THE NORMAL AND OF THE DISEASED EAR.

#### I.

**I**N addition to the examination with the whispering and the conversational voice, we require a continuous scale of pure sounds free from overtones, of which every single tone is loud enough to permit the diagnosis of deafness through its non-perception, in order to obtain a general estimate of the complete hearing power of an auditory organ.

Edelmann has made a continuous tone series, under my directions, which answers for testing the lower six octaves of the tone scale from  $C_2$ - $c^{iii}$ , by means of clamped tuning-forks with movable weights, two organ pipes, and a Galton whistle modified by himself for the adjoining upper part of the scale to the highest hearing limit.

A tuning-fork with clamps registering down to eleven double vibrations is added to determine the physiological lowest limit. This very complete fork can be spared in the examination of affected ears.

The normal upper hearing limit is contained in the range of the Galton whistle. According to C. Stumpf and M. Meyer, who have experimented with Edelmann's modified Galton whistle and other sources of sounds for the upper



part of the scale, the Galton whistle gives the highest tones in the scale of all the more usual methods of examination, though tones over twenty thousand vibrations can no longer be located in the scale with accuracy.

The continuous tone series is only employed to prove total defects for any part of the tone scale and this only by air-conduction. Thus in the moderately deaf in each case requiring a more exact functional examination, the lower- and the upper-tone limits are determined; while in those who are very deaf, completely deaf for speech, and deaf-mutes, first the determination of the contraction at the upper and lower ends is made and then all defects and islands occurring within the range of the tone scale are out.

Partial defects, *i. e.*, shortening of the hearing for separate tones in the various parts of the scale, require for the more exact graduated determination of the shortening, sources of sound which die out very slowly. The pipes cannot be used for this purpose, and in the lower part of the scale where the forks are clamped it is better to have sound sources which die out as slowly and unimpededly as possible. Hence, unclamped forks are the most suitable to test the duration of hearing.

The examination for partial defects in the range of the scale is more tedious than to find total defects at various places, and it is sufficient to record the hearing duration throughout the scale from interval to interval in fifths or octaves which Lucae, Dennert, Hartmann, and others have done.

With a view of doing without another series of unclamped tuning-forks for testing the hearing duration for air-conduction, Edelmann has so arranged the succession of the clamped forks that with weights removed they follow one another in the intervals C, G, c, g, etc. Furthermore, to enable the examination of the upper part of the scale for its duration, a portion which has a practical significance, the tone series was continued upward in equal intervals by means of unclamped forks to the height of  $c^v$  inclusive, which sound as intensely and cease as slowly as the excellent tuning-forks  $c^{iv}$  and  $f\ sharp^{iv}$  of Lucae.

The tone series consequently embraces all octaves from C-c<sup>v</sup> and also from G-g<sup>iv</sup> in unclamped forks and allows the estimation of the hearing duration in fifths, fourths, or in octaves, according to the demands of each case.

This series of unclamped forks can also be employed to test bone-conduction from the vertex or the mastoid process and as well for the comparison of the air- and bone-conduction (Rinne test). I have, however, found that the unclamped forks A and a<sup>i</sup> are more serviceable for the latter experiment.

A supplementary fork between these two may be employed, though A and a<sup>i</sup> usually suffice. In the areas of the tone series below A and above a<sup>i</sup>, the examination of bone-conduction and for the Rinne test loses in accuracy, and especially in the portion below A, while here the simultaneous concussion of the bone is too violent and easily causes confusion between tactile and hearing sensations; in the part above, because here the accompanying air-perception cannot be excluded with certainty.

Additional examinations with other sources of sound which contain only one or a few impure tones, as Politzer's acoumeter, the watch, etc., seem unnecessary, as in the presence of extensive and uneven involvement of the hearing scale of the diseased ear a uniform examination with a single or a few tones will now give a satisfactory insight into the complex changes found in ear disease.

An especial examination of those tones would be of interest whose pitch corresponds to speech sounds. These, especially as regards the consonants, have not been generally located with sufficient certainty in the tone scale.

## II.

### DESCRIPTION OF THE METHOD FOR THE EXAMINATION OF HEARING.

I agree with Oscar Wolf that the examination with the speech in every case is essential and our best means to gain a general survey of the hearing power in a given case.

The whispering voice is probably universally used when it can still be perceived near the ear. The intensity of this

source of sound can be regulated by the exclusive use of the reserve air remaining after a forced expiration.

In this examination the numbers 1-100 can be used. The more or less characteristic deafness for certain numbers in some ear diseases has been described in my "Report on the Present Position of the Examination of Hearing" at the fifth meeting of the German Otological Society in 1896.<sup>1</sup>

A further functional examination is necessary:

1. Where a discrepancy exists between the objective otoscopic examination and the diminution of the hearing for speech.

A rapid sinking of the hearing power in the course of an acute or chronic purulent otitis is of importance in the diagnosis and treatment, as was also mentioned by Habermann at the Sixth Congress of the German Otologists in the discussion of my paper. If, for example, during our observation complete monolateral deafness appears in a short time in the suppurating ear, as is shown in labyrinth necrosis, from this symptom alone in an acute purulent otitis, operation is urgently indicated.

2. A functional examination cannot be neglected in the many cases of moderate or slight deafness where the *Mt* and the middle ear show no objective changes.

Our procedure is as follows:

(a) Determination of the upper and lower limits with the continuous tone series.

(b) Measuring the hearing duration (usually for A and a<sup>1</sup>) from the vertex after Schwabach.

(c) Rinne's test (usually with a<sup>1</sup>) with the difference noted in seconds between air- and bone-conduction.

(d) Weber's test.

3. To obtain a satisfactory picture of the diminution of hearing in the range of the tone scale in high-grade deafness and in one- or double-sided deafness for speech we must employ, besides the above, the entire series of clamped forks and in bilateral deafness the determination of the air-conduction with pipes in small intervals before each ear.

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<sup>1</sup> These ARCHIVES, vol. xxv., No. 3, and *Funktionsprüfung des menschlichen Gehörorgans*, Wiesbaden, Bergmann, 1897, p. 203.

If we desire to demonstrate partial defects for separate areas besides real islands and gaps, the tedious determination of the hearing duration is necessary—that is, the time during which the fork can be heard by our own or a normal ear after its perception by the affected ear has ceased.

This latter examination is also necessary to determine one-sided complete deafness. With this method, necrosis of the cochlea can be diagnosticated long before the sequestrum appears.

The examination with the entire tone series for air-conduction is of value not only theoretically but practically in the examination of

4. *Deaf-Mutes.* The hearing remnants found in the ears of deaf-mutes, which must not only be demonstrated but the hearing duration tested, give us the only indication of the possible value of speaking instruction.

That the teachers in the deaf-mute schools have not a sufficient knowledge of the hearing remnants possessed by their pupils is proved by my examinations, which show that there were several deaf-mutes with remnants of hearing, who were considered to be totally deaf because they either did not speak at all or imperfectly. After an examination with the tone series, and after a suitably arranged plan of instruction, making use of the ear, had been carried out for a year, these pupils belong to the best speakers among those instructed by ear.

Other methods of examination, such as Gellé's, and Denner's quantitative examination, etc., may of course be tried.

To permit a functional examination of every doubtful case, it is necessary to limit the examination to that which is of greatest value in the diagnosis; this will explain my selection of the above tests.

### III.

#### A UNIFORM METHOD OF EXPRESSION FOR THE ANNOTATION OF OUR HEARING TESTS.

For whisper or conversational voice it is sufficient to note the hearing distance for the word which was perceived the poorest (number) with the special mention of the same.



The distance in centimetres or metres of an improvement in hearing is found given in literature without mentioning the hearing distance which is present ; this is of course valueless.

Great confusion exists at present among authors in the enumeration of the tone scale. The one uses large, the other small letters ; the numerals for the octaves are placed by some above, by others below the letter ; others again only give the letter in apostrophe <<a>>, etc.

The remedy is easy. We should follow the numeration given by Helmholtz in his book, *Die Lehre von den Tonempfindungen*. These are as follows :

$C_2$	$C_1$	$C$	$c$	$c'$	$c''$	$c'''$	$c''''$	$c'''''$	etc.
16 v.d.	32	64	128	256	512	1024	2048	4096	

It is perhaps a useful simplification to write  $c^{iv}$  instead of  $c''''$ , etc.

As Rinne's, Schwabach's, and Weber's tests are regularly employed, the expressions positive and negative are apt to be misleading. For the Rinne and Schwabach these expressions are perfectly clear and logical, and it is desirable to add the positive or negative number of seconds. In Weber's test these terms are unsuited ; it is better to simply state the more or less or not affected ear in this manner.

To obtain a more accurate expression of all the possibilities which may produce the failure of Rinne's test, I have started with the difference  $t-S$ , in which  $t$  stands for the time of the air-conduction and  $S$  for that of bone-conduction of the examined ear.

If the fork  $a$  is only perceived by air-conduction and is not heard when placed on the mastoid process, then  $S = 0$  and Rinne is  $+t$  ; if the fork is not perceived by bone-conduction or not at all by air-conduction  $t = 0$  and Rinne is  $-S$ . All other possible conditions, according to the preponderance of  $t$  or  $S$ , are expressed in seconds with the positive or negative difference in numbers between  $t$  and  $S$ . If the normal failure of Rinne's test is not known for a given tuning-fork, as for instance in the fork  $a^i$  used by me ( $+30$  sec.), the number in seconds must be added in brackets. This method of expressing Rinne's test is simple and easily



comprehensible, and is at the present time used by several authors.

In applying Rinne's test with the lower forks (a and A), as to the location of the bone selected, the vertex is preferable to the mastoid, because the size of these forks precludes even a partial localization of bone-conduction to one ear alone.

To insure an equal pressure of these forks in Schwabach's and in Rinne's tests, it is simplest to let them rest on the vertex by their own weight.

The lower-tone limit is given by the lowest tone that can be perceived, an island by the two border-tones still perceived, a gap by the two border-tones not perceived.

The upper-tone limit can be accurately determined to  $\frac{1}{10}$  mm of the subdivision for the normal or the defective ear by Edelmann's modified Galton whistle, with movable mouth-piece. The highest tone, which usually lies for the normal ear at a length of 0.2 mm of whistle tube, can be perceived with great accuracy and at some distance (5 m or more) from the normal ear. It is well to mention besides the length of the whistle tube, also the hearing distance for the upper limit. Therefore, in place of moving the piston exceedingly small distances, about which the normal upper limit varies, the distance is noted at which the approximately highest tone is heard by the sound ear, usually in metres, and by the defective ear usually in centimetres. The determination is thus made easier and more accurate.

With the modified Galton whistle the upper limit for the normal ear is usually 0.2 for 5 m or more distance. As the normal limit is not the same for all Galton whistles, each normal must be added in brackets.

The examination of the hearing duration for each of the above mentioned unclamped forks is the following: The difference in the perception of the fork by the sound and the affected ear is given by measuring the time the fork takes to die out in front of the sound ear after it has ceased being perceived by the abnormal ear. If the hearing duration of the normal ear for each fork equal 100, then for the affected ear it could be determined by the formula  $x = \frac{n-t}{n} 100$ , where n is the hearing time for the normal ear for the fork in use, t the

time (in seconds) by which the normal ear hears longer than the affected one. The results of these formulæ may be directly compared.

This notation is satisfactory as a description of the hearing acuity; a smaller or larger value of the hearing duration corresponds to a smaller or larger value of hearing acuity.

A more correct impression is obtained when the relation of the diminished to the normal hearing duration is replaced by the relation of the corresponding tuning-fork elongations.

Edelmann has recently worked out a table giving the proper relation of amplitude for each hearing duration from 0-100. This will permit a quick translation of time coefficients into those of elongation.

A CASE OF CEREBRAL ABSCESS FOLLOWING  
PURULENT INFLAMMATION OF THE MID-  
DLE EAR—OPERATION—EVACUATION OF  
ABSCESS—DEATH.<sup>1</sup>

By CHARLES H. MAY, M.D.,

CHIEF OF CLINIC, EYE DEPARTMENT, VANDERBILT CLINIC, AND INSTRUCTOR IN OPHTHALMOLOGY, COLLEGE OF PHYSICIANS AND SURGEONS, MEDICAL DEPARTMENT, COLUMBIA UNIVERSITY; ASSISTANT OPHTHALMIC AND AURAL SURGEON, MT. SINAI HOSPITAL, NEW YORK.

THE following history is interesting since it adds another to the number reported within the past few years, in which a brain abscess was suspected, correctly diagnosed, and quickly evacuated, but in which such surgical intervention was unsuccessful in saving the life of the patient because the opportunity to operate presented itself too late. The abscess was of the size of a large walnut, single, its wall about 4 *mm* in thickness; it was situated in the middle convolution of the left temporo-sphenoidal lobe, entirely in the white substance of the brain at a depth of about an inch: there was no meningitis. The mastoid process was eburnated, as it is so frequently in these cases; the attic was filled with pus, granulation tissue, and cholesteatoma; the tegmen tympani presented no opening or caries, and the dura covering this part was not abnormally adherent nor changed; there was no direct connection, therefore, between the source of infection in the ear and the abscess.

Mrs. M. B. was admitted to my service in the Mt. Sinai Hospital late in the afternoon of January 10, 1900. She was in a semi-comatose condition; the following history was obtained from

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<sup>1</sup> Reported at the New York Otological Society, January, 1900.

a member of her family and supplemented by information from the physician who had her in charge for several days previous to admission.

*Previous History.*—Two years previously the patient had severe pain in the left ear, followed by a discharge; the latter continued for one year and then ceased. The patient was well until two weeks before admission, when she began to complain of pain in the left ear, followed by a scanty discharge. The day before admission to the hospital, she became irritable and excited; she began to scream and moan; this stage was soon succeeded by drowsiness. On the morning of admission the family physician noticed some interference with speech, but the exact nature of this aphasia was not determined. There had been no vomiting, no chills, no fever, no convulsions, no paralyses, no polyuria, no incontinence of urine or fæces.

*Examination on Admission.*—The patient is semi-comatose; pulse 60 and irregular; respirations 20; temperature 99.6°. The pupils are contracted (this condition may have been the result of drugs received before admission to the hospital), but responded to light; after dilatation of the pupils with a mydriatic, examination of the fundus showed papillitis of moderate severity on both sides, but more marked on the left side.

The left external auditory canal is somewhat reddened and swollen and filled with offensive purulent discharge. After removal of this, a large perforation of the *Mt* was found. The entire left mastoid region was exceedingly tender to pressure, but there was no swelling or redness of this area.

Though it was impossible to make an exact diagnosis on account of the semi-comatose condition of the patient, the absence of localizing symptoms, and the insufficient data conveyed by the previous history, it was evident that the patient was suffering from cerebral compression; the slow pulse, partial unconsciousness, and optic neuritis made such a diagnosis probable. The condition of the ear and the previous history of aural suppuration pointed to an accumulation of pus as the cause of the compression. In the absence of localizing symptoms, it was, of course, impossible to say whether this accumulation was epidural or in the substance of the brain, or to locate it definitely. It seemed probable, however, that it was in the neighborhood of the

middle ear of the left side. The patient was prepared for operation, and within a few hours the operation was performed.

*Operation.*—Anæsthetic, chloroform changing to ether. An extensive incision was made over the mastoid, one quarter of an inch removed from the attachment of the auricle, extending above to a point corresponding to the upper limit of the auricle and below to the tip of the mastoid. The periosteum was healthy. The incision was made down to the bone, bleeding vessels ligated, and the periosteum and overlying parts separated by retractors, leaving a large field for operation. The usual opening into the mastoid was made with chisel and mallet. The bone was eburnated and almost entirely devoid of cells. After proceeding to the depth of seven eighths of an inch a small space was found which was taken to be the antrum; it was empty. The mastoid was then chiselled away in the direction of the tip and found unaltered except by the eburnating process already alluded to. The sinus was not exposed because there was no suspicion of involvement of this part.

The incision through the scalp was next prolonged upwards and backwards. A point was chosen for entering the cranium, one inch and a quarter behind the centre of the external auditory meatus, and an inch and a quarter above its horizontal plane. This point was selected for the opening in the absence of definite localizing symptoms, because this region serves as a good centre for exploration in various directions. A piece of bone about the size of a cent was removed with the chisel. The dura was somewhat congested but otherwise normal. A good-sized needle attached to a small aspirator was pushed into the temporo-sphenoidal lobe in a direction towards the median plane and somewhat forward; at a depth of one inch, pus was encountered, and about one drachm withdrawn; it was exceedingly offensive.

The opening in the cranial bones was enlarged with bone-forceps until it measured an inch in diameter, the dura corresponding to this space divided, and a free incision made into the brain substance in the direction shown by the needle; another drachm of foul-smelling pus, together with necrotic brain tissue, escaped. Gentle probing showed that the cavity was enveloped by a wall, and its extreme internal limits were somewhat over two inches from the surface. The abscess cavity was cleansed and irrigated



with a normal saline solution, and a drainage-tube and gauze drain inserted. The incision through the soft parts was sutured at the extremities, leaving the areas corresponding to the cranial and mastoid openings free; these were packed with iodoform gauze; the usual dry dressing was applied and kept in place by suitable bandages.

*Course.*—At the end of the operation, which had consumed an hour and a half, the patient's condition was the same as upon admission to the hospital. After removal to the ward, she became very restless; a hypodermic injection of five-minims of Magendie's solution was given. The pulse continued slow, and soon became more irregular. Two hours after the operation there was contraction and rigidity of the left leg and divergence of the eyeballs, the pulse became more irregular; strychnine was given hypodermically. At 2.30 A.M., pulse 80, respiration 36, and temperature 102°. The patient died at 3.45 A.M., January 11th.

*Autopsy (brain only).*—No autopsy was allowed, but by enlarging the operation wound, a satisfactory examination of the brain was obtained. The abscess cavity was found in the middle convolution of the left temporo-sphenoidal lobe, about the size of a large walnut, entirely in the white substance of the brain. Its wall consisted of purulent matter and fibrin, and had a thickness of 4 mm. Microscopical examination of some of the contents of the abscess showed the presence of streptococci in large numbers. No other abscess was found. There was no perforation into the ventricles, no sign of meningitis, no involvement of the sinuses. The dura could easily be removed from the tegmen tympani and appeared normal. There was no opening or caries of the tegmen tympani. On removing this covering the attic was found full of pus, granulation tissue, and cholesteatomatous masses.

A FATAL OTITIC ABSCESS IN THE LEFT  
TEMPORAL LOBE OF THE BRAIN CAUS-  
ING WORD-BLINDNESS. OPERATION. AU-  
Topsy.

By HERMAN KNAPP.

( *With one text illustration.* )

CASES of failure which by better appreciation of existing conditions or prompter action might have been turned into successes should always be published as warning examples. They are no less instructive than the favorable ones, and give a mighty stimulus for improvement not only to the candid author but also to the judicious and fair-minded reader. The following case may serve as an example in point:

Fanny W., twelve years old, New York, came under my care December 18, 1899. She had had left-sided otorrhœa from childhood off and on. Eighteen months ago while in the country she had "an abscess in her left ear," and more or less discharge from the ear ever since. Four weeks ago she had an attack of intense frontal headache with nausea and vomiting. She was more or less ill during these four weeks. December 17th, she became unconscious at 6 P. M. and had violent convulsions for the next six hours. Dr. Fruitnight, the family physician, ordered icebags to the head. The convulsions ceased. I was asked at 12 M. the next day to see the patient in consultation. We met at 1.30 P.M., and found the patient excited and exceedingly frightened but conscious and rational. Her temperature was 101° F., her pulse 100. Movements and sensibility normal. Pupils, backgrounds of eyes, sight, and *field of vision* normal. Very scant secretion in left ear; fundus of ear canal not clearly seen, but free from

granulations ; no sagging of posterior-upper wall ; slight swelling and tenderness of mastoid. Optical amnesic aphasia pronounced. When an object was held before her and she was asked what it was, her face brightened with attention, while she looked perplexed and said, "I know what it is, but cannot name it"; when told, she instantly and correctly repeated the word. For instance, a watch was held before her; she looked puzzled and somewhat angry from not finding the name. When told, she at once said : "Oh, yes, a watch."

The **clinical diagnosis** of Dr. Fruitnight and myself was: *deep mastoid and epitympanic caries, epidural and cerebral abscess, beginning meningitis*. We told the relatives we felt sure that surgery only could save her life, and that an operation should be done without delay ; the prolonged convulsions were the last warning. The relatives consented. She was taken to the New York Ophthalmic and Aural Institute and operated on by the writer, with the assistance of Drs. Fruitnight, Jordan, Nolte (the house surgeon), and several others, at six o'clock the same afternoon.

**Operation :** After the usual preparation an incision was made down to the bone, from the tip of the mastoid along the insertion of the auricle, as far as the zygomatic ridge. The bone surface, freed from the periosteum with a raspator, was vascular, more in the lower than in the upper part. The skin lining the posterior and upper meatal walls was dissected from the bone and drawn out and forward with a strip of aseptic gauze passed, along the bared bone, into and out of the ear canal. The mastoid, when opened, was found diploic, vascular, and very brittle. The posterior and upper walls of the bony ear-canal were chiselled away and the antrum and attic were laid bare. The latter was packed with cholesteatoma masses, which were cleanly removed.

Then the *posterior cranial fossa* was exposed by chiselling and curetting away all the carious bone that separated it from the body of the mastoid. The dura and the sigmoid sinus, open to view, showed no abnormality. There was neither epidural abscess nor external pachymeningitis.

After this the upper wall of the attic, which was carious, was removed and the *dura of the middle cranial fossa* exposed in an area 2.5 cm by 2 cm. The dura was congested and also slightly uneven and dull. Near the posterior-medial corner of the exposed area I noticed in the dura a *blackish round spot* of about 3 to 4 mm in diameter, with a central depression through which

I could introduce a probe 4-5 cm into the brain, without meeting with any resistance or eliciting blood or pus on withdrawal. The latter condition and the late hour of the day determined me to *interrupt the operation*. The radical tympano-mastoid operation and the opening of both the middle and posterior fossæ, having removed the source of the whole disease and relieved the brain from pressure, could be supposed to place the patient beyond immediate danger and into more favorable circulatory and mechanical conditions for amelioration of the symptoms, and might furnish during the next days a clearer indication of the location of the abscess. The wound, therefore, was cleansed with aseptic gauze, the meatal skin-flap split horizontally, and the outer edge of the latter extended by two vertical incisions. The flap was pressed against the wound of the mastoid with sterilized iodoform gauze, the ear bandaged, and the patient put to bed.

*December 19th.*—Night quiet. Feels better; is rational. Names most objects at sight. Temperature, ranging from  $101^{\circ}$  to  $102^{\circ}$ . Pulse, from 110 to 120.

*December 20th.*—Still better. No word-blindness. Is cheerful. Temperature,  $99.3^{\circ}$  to  $101^{\circ}$ . Pulse, 80 to 100.

*December 21st.*—Fails to name some objects she sees. Is quite rational. Appetite good. Temperature varying from  $99.2^{\circ}$ , pulse 80, to temperature  $100.3^{\circ}$ , pulse 118. Dressing of wound changed; smells strongly.

*December 22d.*—Quite rational. Appetite poor. Nausea and severe headache. Dressing changed. Temperature  $99.3^{\circ}$ , pulse 100, to temperature  $101.3^{\circ}$ , pulse 120. Morphia.

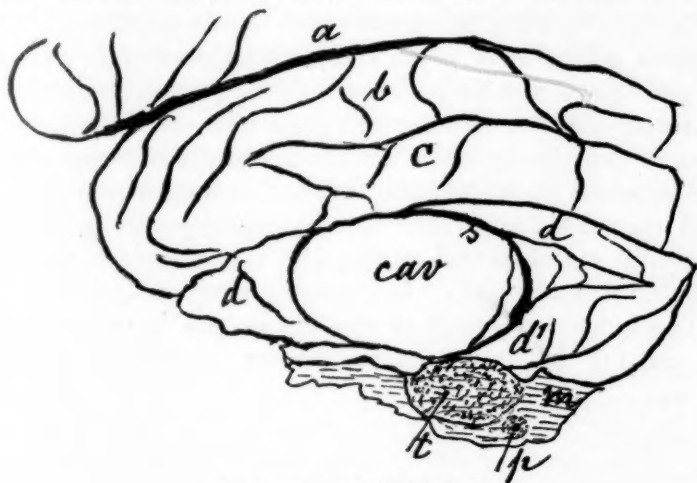
*December 23d.*—Sleep interrupted. Nausea. Severe headache. Anorexia. Temperature  $99^{\circ}$ , pulse 96, to temperature  $100.8^{\circ}$ , pulse 108. Quite rational. Wound clean.

*December 24th.*—In the morning, some nausea and vomiting; slight secretion. Severe headache. No appetite. 2 A.M., temperature  $97.4^{\circ}$ . At 5.30 A.M., temperature  $98.2^{\circ}$ , pulse 80; 11 A.M., temperature  $98.3^{\circ}$ , pulse 70; 9 P.M., temperature  $100.2^{\circ}$ , pulse 60. In the morning, complained greatly of headache. Morphia. In the afternoon, slept soundly and felt pretty well; in the evening, headache and drowsiness.

This being the first day that the elevated temperature, the slow pulse, and the other symptoms had the character of a brain abscess, an operation was decided upon for the next day.

At 9.45 P.M. she suddenly gave a shriek, jumped out of bed ; her face grew purple. At 9.50 she stopped breathing ; face white ; tongue protruded, and foam coming from the mouth. Death.

**Autopsy** (partial only allowed): Wound clean ; skull thin. The dura shows dark venous congestion. Very few adhesions of the dura to the anterior surface of the petrous bone, some also to the occipital lobe. The dura, as far as exposed by the operation, was thickened by granulations—*t* in accompanying figure. The blackish, centrally perforated patch (*p*) still well recognizable. After incising the dura, the blackish patch was found agglutinated loosely to the pia. There was no subdural exudation, and the soft membranes showed no conspicuous abnormality. The veins in



Explanation of the Figure.

*a*, Sylvian fissure ; *b*, *c*, *d*, first, second, and third temporal convolutions ; *cav*, abscess cavity ; *s*, abscess wall ; *d¹*, lower surface of third temporal convolution ; *t*, thickened dura which had been exposed during and since the operation ; *p*, perforated black patch of the dura mater, *m*.

the Sylvian fissure (*a*) were much congested, the gyri and sulci darkened, the latter effaced, *i. e.*, only indicated by lines. The first temporal convolution (*b*) looked tolerably healthy, the second (*c*) slightly, and the third (*d*) very much discolored. In the middle part of the temporal convolutions the brain substance was softened to the extent of 8.5 *cm* in length and 5 *cm* in height. The softening was immediately above the black patch (*p*), where the dura (*t*) was perforated.

The right hemisphere showed no abnormality.

After the brain had been removed in toto, it was divided in the median line. At once a large quantity of thin purulent offensive



liquid, with many small particles, flowed out from the third and the left lateral ventricle. The walls of the ventricles were finely uneven. Temporally from the lateral ventricle a large abscess cavity (*cav*) was situated, surrounded by a dense white capsule (*s*), which was ruptured in front and toward the lateral ventricle behind. It contained the same material as the ventricles. The capsule of the abscess was surrounded by a zone of softened brain substance varying from 5 to 15 mm in breadth. The track of the probe which had been introduced into the brain could not be discovered.

After hardening in formol the following conditions were ascertained:

Antero-posterior diameter, 185 mm (7 inches). An abscess cavity (*cav*) occupied the middle of the temporo-sphenoidal lobe, situated a little more in the anterior part than in the posterior. It was surrounded by a dense, uniform white capsule (*s*), the thickness of which varied from 0.5 mm to 5 mm. It was perforated in two places: (a) in front, the contents being mixed with the broken-down surrounding tissue; (b) at the posterior medial wall into the posterior outer cornu, the contents filling the lateral and third ventricles and mixing with the softened cortex of the adjacent posterior part of the temporo-sphenoidal lobe.

The inner dimensions of the abscess cavity were: Sagittal, 45 mm (1 $\frac{3}{4}$  inches); vertical, 26 mm (1 inch); horizontal, 20 mm.

The inner surface of the abscess cavity was smooth, with some depressions here and there; in the neighborhood of the perforations of the capsule it was uneven and softened.

#### *Remarks.*

A feature of the case was that during a period of nine or ten years there were no ear symptoms of any significance. Then, for two years the symptoms were mild and transient, but became acute during the last four weeks. They pointed more toward a meningitis than an abscess, and meningitis was also the diagnosis of probability held by Dr. Fruitnight. Even after the operation the general symptoms were not characteristic of brain abscess, for elevation of temperature was not combined with slow pulse, except during the last twenty-four hours. It was surprising to me that at the operation and at the autopsy neither meningitis nor epidural abscess, but a plain cerebral abscess, was found. This is

explained by the thick capsule, which shows that the abscess was very old and accounts for the long period of latency.

At the operation I thought I was sure of the presence of an abscess. Apart from the history and the word-blindness, the cholesteatomatous deposit in the attic, the caries of the roof, the congestion and a slight thickening of the exposed dura, and the small perforated, discolored patch of the dura over the necrosed tegmen tympani seemed sufficient evidence for the presence of an abscess. The negative result of the exploration of the brain with a probe, made me hesitate and put the operation off. The autopsy has demonstrated that the abscess was near the black patch in the dura, as usual (Körner), and that probing is not reliable in searching for cerebral abscess. The exploring instrument should be an aspirator with a sharp needle of sufficient calibre to suck up thick and grumous pus, or, still better, a knife with a sharp point and at least 4 mm in breadth. Either of these instruments might have drawn the pus, and yet either might have failed, like the probe. The abscess had a thick, tough capsule on its lateral side, which it might not have been easy to perforate. This supposition is not merely theoretical, for it was exemplified by a case of one of my New York colleagues in which a cerebellar abscess had been diagnosed with full confidence, yet the aspirating needle failed to elicit pus. At the autopsy it was found that the abscess was at the place where it had been thought to be; the needle had touched its wall, which was unbroken and so dense that the needle could not pierce it.

As to the precise location of the **optic memory centre**, our case furnishes no addition to the stock of knowledge acquired thus far. We are taught that this centre is in the temporo-sphenoidal lobe. To verify this broad statement our case, indeed, offers another example, but does not show the precise place, for the softened area was too large. I may say, however, that now, after hardening the brain, the cortex of the superior temporal convolution was not softened anywhere, and that of the middle convolution was softened only at its lower border and in a small patch in its middle part, whereas the

third convolution, both on its lateral (*d*) and lower surfaces (*d'*), was most extensively softened.

Another noteworthy feature in our case is the **absence of optic neuritis and homonymous hemianopsia**. It shows that the inflammatory symptoms produced by the abscess were not intense or old enough to produce choked disc, and that the fibres of the optic radiation had escaped destruction. It is stated, without an attempt at explanation, that optical aphasia is frequently, but by no means always, combined with hemianopsia. The separation or combination of optical aphasia and hemianopsia may be of value in localizing a focal disease.

As to the **explanation of the symptoms and course of the disease** during the last four weeks, we may fairly assume that the aggravation which led to the patient's death was caused by the abscess extending beyond the confines of its capsule. Renewed inflammatory action caused the various symptoms found in meningitis and in abscess, and led to a marked exacerbation, violent convulsions for six hours, etc., when the first perforation of the capsule, that in the anterior part, poured a portion of the contents of the abscess into the surrounding brain tissue; whereas the second perforation, that into the ventricles, caused the sudden death. The notable improvement after the operation is a well-known consequence of relieving, in inflammatory brain disease, the intercranial pressure by opening the skull.

REPORT OF THE SECTION OF OPHTHALMOLOGY  
AND OTOTOLOGY AT THE NEW YORK ACADEMY  
OF MEDICINE, NOVEMBER 20, 1899.

OTOLOGICAL PART.

By DR. J. H. CLAIBORNE, SECRETARY.

The President, Dr. PETER A. CALLAN, in the chair.

Dr. E. GRUENING presented a case of **otitic brain abscess with operation and recovery**. The patient was shown. He was a small boy, the son of a physician, who had had earache for two weeks. The temperature rose. Pain finally ceased, but inasmuch as there was still fever the idea of malaria was entertained. He continued to complain. The ear stood off somewhat from the head. When brought to him the boy appeared to be bright, there was no pus in the ear, but Shrapnell's membrane was red and swollen. Operation was performed upon the mastoid. The cortex was sound. The antrum was exposed. Some pus was found and the mastoid was filled with granulation tissue. The lateral sinus was exposed; then the anterior wall of the antrum. He found the dura bare and discolored. There was caries in the antrum. The incus was removed easily. Operation was discontinued and the case observed. At the end of the fifth day the temperature rose to 105° F. and the patient vomited. Then pus appeared in the ear. The patient became unconscious, the temperature rose, and pus appeared again. There was some improvement but the incision was carried forward in the soft parts, the squama exposed, and its lower portion removed. There was a fistulous opening present which being cut into brought forth two drachms of creamy, inodorous pus. Apparently there was no pyogenic membrane. It was packed dry with iodoform gauze. Dry treatment was continued. There was a large prolapse of brain tissue which finally shrank. When almost well the patient one day suddenly became speechless and had several convulsions.

The region was explored once more but no pus was found. These symptoms disappeared and the patient made an uneventful recovery. Dr. Gruening concluded that the last symptoms were hysterical. It was of interest that there was no suppuration of the middle ear and that the result was so favorable.

Dr. LEDERMAN in the *discussion* referred to one of his cases of o. m. p. c. which was at first thought to be malaria. There was no swelling in the mastoid but there was a painful point above it. The plasmodium of malaria was found in the blood. On operation an epidural abscess was discovered.

Dr. FREDERICK WHITING called particular attention to the removal of the squama in Dr. Gruening's case. He thought it was unusual but considered it the proper thing to do. He favored opening the squama along the arch of the auditory meatus and backward, and pointed out that under such circumstances the drainage was better. He had a case similar to that of Dr. Gruening and opened the abscess. The patient died of leptomeningitis suppurativa.

Dr. H. KNAPP referred to statistics of abscess in o. m. p. acuta and said that it was not so rare, about 15%. As to Dr. Whiting's suggestion in regard to opening the bone he said that this method was first advocated and tried by Rose and followed by v. Bergmann and many others. He referred to the difficulties presented in some cases by the thickness of the zygomatic ridge.

Dr. MCKERNON referred to a case of o. m. p. a. which he had reported. The case ran a course of three weeks and was moribund when he saw it. There was a small quantity of pus in the mastoid. He exposed the dura and found two drachms of dark-colored pus. He was unable to say where the pus came from but found an opening above the tegmen tympani.

Dr. GRUENING said that the abscess in his case was found to contain streptococci longi. Examination of the eyes was negative.

Dr. POOLEY reported a case of **osteoma of the auditory canal and exhibited a specimen**. The patient was an Italian, the lumen of whose auditory canal was almost occluded. The swelling was covered by common integument. The use of the probe revealed the fact that the swelling was due to osteoma. Probing revealed swelling of tragus and the post-auricular region. Some pus came from the canal. The osteoma was grasped with Hinton's forceps and was removed with ease. The posterior



wall of the meatus was the site of granulation tissue which was scraped away and the canal packed and antiseptically treated. He considered the case a successful one.

Dr. E. B. DENCH said that it was well in some cases to remove these osteomata from behind the ear. He referred to the trouble which is sometimes caused by the impaction of cerumen in the canal and the advisability of treating such cases by operating behind the concha.

Referring to Dr. Dench's views, Dr. H. KNAPP said that this treatment had been described by him about twenty years ago and referred to by Schwartz in his *Handbuch*. He and others had published cases operated upon in the same way since.

Dr. WHITING detailed a case of impacted cerumen in which there was also o. m. p. a. Two exostoses occluded the view of the fundus of the ear, but the symptoms of the case pointed only to impacted cerumen. The unskilful attempts of a physician to remove the cerumen caused pain and suppuration. The exostoses were subsequently removed.

Dr. POOLEY in reply said that he was aware of the facts referred to by Dr. Dench and Dr. Knapp. He saw no occasion to attack his case from the rear inasmuch as the exostosis was easily removed with forceps through the auditory canal. He thought the surgeon ought to be selective in his treatment.

Dr. MAX TOEPLITZ reported a case of suppuration of the right ear in a young man aged seventeen. Following upon hardness of hearing, pain under the right ear occurred. Shortly afterward chills set in, with a profuse discharge from the ear. The mastoid was sensitive but not swollen. The facial muscles twitched. The background of the eye was normal. The region of the right internal jugular was painful upon pressure. There was swelling of the right ankle. The mastoid was opened and connection with the middle ear was made. There was no pus in the mastoid, but between the inner plate and the sinus a few drops were found. The sinus was laid bare and was found to be yellowish-green in color. The middle cerebral fossa was free. The patient collapsed and operation was interrupted. Suppuration of the right ear ceased. The leg then became more swollen, chills appeared again, the right hip swelled, then the right shoulder. After another chill the sinus was exposed and two ounces of pus removed. At his request the jugular vein was laid bare by Dr. W. Meyer as far down as the clavicle, doubly ligated, and partly

excised. A few days afterward the right wrist swelled. More chills followed. The nose discharged a serous secretion mixed with blood. Isolated pulmonary infarctions with encapsulated pleuritic effusion were found and aspirations made. The left leg swelled. Endocarditis set in with a chill. At the end of three weeks from the beginning of treatment improvement took place until final recovery resulted. The wound closed after several months. There was albumen in the urine from the beginning. Perforation of the right membrana tympani was closed by a secondary drum and the patient heard with the right ear conversation at ten feet. The patient was exhibited and a large scar was shown which extended from the mastoid down over the region of the internal jugular to the clavicle.

Referring to Dr. Toeplitz's remark that this was the first case on record in which general pyæmia had occurred as a result of mastoid complication, Dr. POOLEY said that this was not so. He referred to a case which went through all the symptoms of pyæmia and finally recovered. He desired to correct this statement.

Dr. LEDERMAN mentioned a case which he said was similar to that of Dr. Toeplitz. He said that in his case recovery was due to removal of the source of infection. He related the history of the case in detail. The patient had exhibited symptoms of mastoiditis without any tenderness along the jugular. The sinus was exposed, aspirated, and a syringe of pus but no blood was evacuated. He pushed the probe toward the torcular and a little blood escaped but no pus. He attempted to find the jugular above the clavicle but only found a small vein and removed some pus from the thrombus. The patient improved. After cutting down on the neck and removing some enlarged veins there was an uninterrupted recovery.

Dr. GRUENING desired to congratulate Dr. Toeplitz on the successful treatment of his case. He called attention to the scar in the neck. He said he thought some discrimination should be made in the matter of making such a wound as this in men and in women. It is not always necessary to cut down upon the jugular. The first thing to do is to open the thrombus and see if it is infectious; if so, the infectious material should be removed.

Dr. WHITING referred to the danger of infecting the wound of the jugular. He said that the injudicious use of the probe was apt to tear or force the visceral wall and set up leptomeningitis. He said that such a thing had been known to occur. He

suggested pulling down the vein and cutting off a piece of it, as this was a safer procedure.

Dr. TOEPLITZ in closing the discussion said he did not consider Dr. Lederman's case similar to his. He agreed with Dr. Whiting that syringing would better be abandoned, but he could not subscribe unqualifiedly to the doctrine of pulling down the vein and excising it.

Dr. R. C. MYLES reported a case of **removal of the cochlea and parts of the semicircular and facial canals through the external auditory canal** and presented the specimen by proxy. The patient had suffered from epithelioma in the region of the zygomatic arch. This had been cured after operation and local treatment by his former attending surgeon. The membrana tympani and the tissues covering the outer ear had disappeared, and white, dead bone was visible in every direction. The facial nerve was paralyzed. The membranes of the foramen ovale and rotundum were absent. He decided to remove all dead bone possible through the external auditory canal. He thought the process extended down to the petrous portion of the carotid artery and that a radical operation might cause a fatal termination if he removed the necrosed artery where it coursed close to the middle-ear spaces. He therefore decided to use a large silver tube. He incised the canal in order that the tube might enter, and he removed large granulations as they formed. He succeeded after two years' treatment, aided by the process of exfoliation, in removing all the necrotic bone. The patient had been discharged cured several months since. The facial paralysis and complete deafness still remain.

By limitation of time the meeting was adjourned.

REPORT OF THE SECTION OF OPHTHALMOLOGY  
AND OTOTOLOGY AT THE NEW YORK ACADEMY  
OF MEDICINE, DECEMBER 18, 1899.

OTOLOGICAL PART.

By DR. J. H. CLAIBORNE, SECRETARY.

Dr. FREDERICK WHITING read the paper of the evening, entitled **The indications for incudectomy during operations for acute purulent otitis media and mastoiditis, as a prophylactic measure against subsequent chronic suppuration.**

The author said that the elements which chiefly contributed to early necrosis of the incus during the progress of suppurative otitis are three in number and that the order of their relative importance might be thus expressed: (1) scanty vascular supply; (2) suppuration of the ossicle; and (3) the shape of the ossicle. He said that the first is the most important element in the causation of early and rapid necrosis of the incus. The second and third are also contributing factors in bringing about such a condition. He said his limited personal experience and observation led him to extract the incus as a prophylactic measure against chronic suppuration under the following conditions:

1. Whenever, by inspection, probing, or otherwise, caries of the incus can be demonstrated.
2. Whenever, by accidental curetting about the aditus or by careless manipulation, the incus has been dislocated.
3. In all cases of scarlet fever or measles if the discharge has existed for four weeks, and in similar cases, irrespective of the duration of the discharge, if streptococci predominated as the infective agent.
4. In every case in which the discharge has persisted for three months or more.

He based his views upon four cases which he detailed at length. The writer deplored the fact that he was unable to bring forward more cases to support the views he had advanced, and advocated a conservative attitude toward such a departure. He deprecated the wholesale mutilation of the tympanum by extravagant and misdirected zeal.

Dr. GRUENING, in the discussion which followed, said that in acute cases in former times it was considered best to operate upon the mastoid and pneumatic cells, but that during the last five or six years we had concluded to go farther. The incus is often dislocated in these operations. He said he could not hold with the writer that caries often occurs in acute suppuration. He had often lifted out the incus without any difficulty and concluded that it had been dislocated. He recommended caution in the use of the probe. Among several cases of removal of the incus he had found caries of the bone in one. He considered the necessity for removal of the incus rare.

Dr. A. B. DUEL said he had operated upon thirty cases of mastoid inflammation at the Willard Parker Hospital and in three or four of them he had found the incus dislocated but never

eroded. He thought it was too radical a statement to say that it was necessary to remove the incus in every case of scarlatina.

Dr. CHAMBERS had operated upon half a dozen cases of mastoiditis within the last months. He failed to see any reason why he should seek out the incus and remove it in these cases.

Dr. WHITING agreed with Dr. Gruening in regard to the ease with which the incus is dislocated and urged that more care be used in the use of the probe. He said that Dr. Duel was mistaken in one of his statements. He ( Dr. Whiting ) had referred to cases of scarlatina in which the discharge had persisted for more than four weeks when he said that the incus should be removed. He also said he failed to understand the position taken by Dr. Chambers and deprecated undue enthusiasm in regard to operation.



REPORT OF THE MEETING OF THE NEW YORK  
OTOLOGICAL SOCIETY, OF NOVEMBER

28, 1899.

BY DR. H. A. ALDERTON, SECRETARY.

PRESIDENT, DR. C. J. KIPP, IN THE CHAIR.

Dr. F. M. WILSON presented the temporal bone from a case of **leptomeningitis of otitic origin**. A man, forty-two years old, alcoholic and giving a specific history, acquired a cold in March, 1899. Pain developed in the right ear and a few days later the ear discharged. During the spring and summer he had constant discharge from the right ear and five or six attacks of severe right-sided headache. Dr. Wilson saw him for the first time September 9th. He had been in bed for four weeks, with severe pain in the right side of the head, thickness of speech, stiffness of neck, no neuritis. Temperature  $101^{\circ}$ . The temperature had been normal until within a few days. There was a perforation in Shrapnell's membrane on the right side. The perforation was enlarged and the hot douche, every hour, was prescribed. On September 12th, the patient was worse, semi-comatose, tremulous movements, temperature  $103^{\circ}$ , increased stiffness of the neck, no external symptoms of mastoiditis. Operation: After penetrating  $\frac{7}{16}$  of an inch of solid bone came, upon a large deep-seated antrum, containing pus but no granulations or softened bone, and apparently having no communication with the tympanic cavity. The antrum was thoroughly curetted. The next day the temperature was down and the pain permanently disappeared; the other symptoms grew worse and the patient died comatose. **Autopsy:** There was a large area of leptomenigitis over the base of the brain, also over the whole right lobe of the cerebellum, in which there was a small abscess as well. There was a clot in the right lateral sinus. The dura over the upper surface of the temporal bone was healthy except at the junction of the petrous ridge and

the squamous portion, where there was a foramen leading through the ridge from the posterior fossa to the middle fossa, and being filled with pus. The perforation of the tympanic membrane had healed. Leading back from the tympanic attic into the petrous portion was a pneumatic space,  $\frac{1}{4}$  by  $\frac{1}{8}$  by  $\frac{1}{8}$  inch in diameter, and from it two pin-hole openings, one leading to the antrum and one leading into the unusual foramen at the point of junction of the petrous ridge and the squamous portion. The sigmoid groove formed part of the roof of the antrum. The posterior end of the foramen through the ridge opened into the sigmoid groove. Dr. Wilson believed that the petro-squamous sinus in the fœtus ran through this foramen, instead of over the ridge as usual, and that this arrangement of bone and air spaces left open a route of infection—through the upper part of the petrous ridge, over the antrum, into the foramen, and thence to both middle and posterior fossæ, without the necessity of any bone erosion. Incidentally, there was a branch route of infection to the antrum.

*Discussion.*—Dr. TOEPLITZ asked for information as to the reflexes and the optic nerves. Dr. WILSON: The reflexes were not tested; there was no papillitis. Dr. WHITING compared this case with a case of cerebellar abscess that he had had. Dr. H. KNAPP spoke on the petro-squamous sinus, citing cases in which it had been distinctly traced in just such a position as that described by Dr. Wilson.

Dr. H. KNAPP presented a **new acoumetric test** brought forward by Gradenigo. Time and amplitude of vibration are distinctly shown optically by means of pasters attached to the clamps of the lower tuning-forks. It is not applicable to the higher tuning-forks.

*Discussion.*—Dr. BACON asked as to whether the pasters could be obtained in this country. Dr. H. KNAPP: This is the only one here but they are very easily made and applied.

Dr. G. BACON reported a case of **sarcoma of the external auditory canal** occurring in a woman fifty years old, who came to the clinic complaining of slight tinnitus and some deafness. Examination showed a tumor apparently filling the external meatus and attached by a pedicle to the posterior cartilaginous canal wall. There was no involvement of the middle ear. It was removed and perfect healing followed. The microscopical examination showed it to be a sarcoma.

*Discussion.*—Dr. GRUENING thought that clinically it was not a

sarcoma ; histologically it may have been. Dr. SHEPPARD asked as to whether pathologists did not admit that they could not distinguish between sarcoma and round-celled granulation tissue.

Dr. A. DUANE reported a case of **middle- and internal-ear disease produced by the concussion due to gun-firing.**

A quartermaster on the *Texas*, six months before the Spanish-American war, had an acute otitis media purulenta in one ear, which healed. During a bombardment, he was in the act of leaving the pilot-house when he was thrown down by the explosion of a gun pointed away from him. He immediately became completely deaf, which deafness later disappeared in the good ear but not in the ear formerly affected. By night that ear pained, discharged, and became completely deaf. One year afterwards, he was seen by Dr. Duane suffering from the same symptoms. There was a small rupture above and forward at the junction with the membranous canal, filled with pus. Functional tests showed complete deafness to tuning-forks, etc. The doctor wished to make a point of the recurrence in the affected ear of an o. m. p. a. leading to o. m. p. c., with the combination of middle- and internal-ear trouble due to concussion.

*Discussion.*—Dr. WHITING wished to know whether the doctor was sure that the original o. m. p. a. had ever healed. Dr. DUANE thought that it was most likely, in view of the complete absence of symptoms. Dr. WHITING drew attention to the fact that a persistent o. m. p. a. often exists without giving rise to symptoms. Dr. GRUENING thought that it was not rare to find an o. m. p. a. following a traumatic perforation ; in fact it was rather common.

Dr. COWEN reported a case of **frequently recurring transitory deafness and fulness in the ear** on one side, which appeared during the act of speaking and was relieved by pressure upon the tragus. Otherwise there was good hearing on that side and the membrane was normal. The Eustachian tube was open constantly. There was no tinnitus. Treatment did not relieve the condition. Dr. Cowen thought that it might be due to a relaxed drum falling upon the stapes, and that traction upon the tragus pulled the membrane away and relieved this condition.

*Discussion.*—Dr. BACON agreed with the speaker in that the condition was probably one of relaxation of the tympanic membrane. He thought that the use of Blake's rubber spring might be advantageous in the treatment. Dr. WHITING wished to

know whether the patient was relieved by auto-inflation. Dr. COWEN: No. Dr. MARPLE: How frequently did this condition recur? Dr. COWEN: Very frequently. Dr. MARPLE: Did you try the effect of the use of the pressure probe? Dr. COWEN: No.

Dr. T. P. BERENS reported a case of **accidental vaccination of the external auditory canal**. There was chill and temperature and considerable induration around the ear. The diagnosis was made upon the history and by exclusion; the microscopic examination was negative.

Dr. BERENS also spoke of a case of **peculiar tinnitus**, of a puffing, pulsating character. Pressure exerted upon the cervical blood-vessels did not relieve, but upon letting up on the pressure the tinnitus became much exaggerated.

Dr. J. L. ADAMS wished to be informed as to the experience of the Society in the **use of hot air through the eustachian catheter**. He had had very good results with it. He used a receptacle containing water heated by means of an electrical contrivance.

*Discussion.*—Dr. BACON wished to know whether both the tinnitus and the hearing had been improved. Dr. ADAMS replied that the treatment entirely relieved the tinnitus in many cases and helped the hearing. Dr. ALDERTON stated that he had recently seen an apparatus devised by Dr. Houghton, of New York, in which the air was directly heated by the electrical current. Dr. Adams had used the instrument without obtaining good results. The temperature could not be regulated. The objection to the hot-air treatment consists in the apparent inability to obtain an even temperature.

Dr. ROBERT LEWIS reported a case of **deafness due to concussion from gun-firing**. The patient, a sailor, had the right side of his face within a few inches of the muzzle of a saluting gun when it was discharged. The man was knocked down senseless and, on his regaining consciousness, dizziness was so marked as to make it impossible for him to walk unaided. The next day, on examination, the right membrana tympani was found to be markedly hyperæmic, and with total loss of hearing on this side. Hearing on the left side was about one-half of normal. The patient was ordered to bed and kept absolutely quiet; a fluid diet was ordered. For the first forty-eight hours ten grains of acetate of potash and twenty grains of bromide of



soda were given in solution three times a day; from the third to the twelfth day ten grains of acetate of potash and fifteen grains of iodide of potash were administered in solution four times daily. From the sixth to the twelfth day, an eighth of a grain (increased to a sixth of a grain on the seventh dose) of muriate of pilocarpine was given three times daily. Mild cathartics were also given. On the thirteenth day, the patient could hear the voice at a distance of one foot in the right ear and the hearing of the left ear was almost normal; the dizziness had disappeared. The man was very weak. Above medication was stopped, and a tonic of iron and strychnine substituted. He had become very restless under the hospital restraint. On the seventeenth day he was allowed to sit up for a short time and on the nineteenth day was allowed to go out for an hour; on the twentieth day he was again permitted to go out, and failed to return. Dr. Lewis never saw the patient again, but learned from his brother some two years later, that a few months after the accident he acted queerly, within a year was hopelessly insane, and died within eighteen months. No specific history nor history of former cerebral or aural disease was obtained.

Dr. DUANE stated that with the big guns the concussion was tremendous, while the sound was not so. The smaller guns produce much more distress from sound than the larger ones.

Dr. GRUENING reported a case of **acute mastoiditis with symptoms of herpes** in the course of the third branch of the trigeminus. This was the third case that he had seen; the former two dying. There was a great deal of temperature and frontal headache in all. Operation was proposed, in this last case, by Dr. Whiting one week previously but was not consented to. The cortex was so thick that no tenderness could be elicited on pressure; there was profuse discharge and headache. At the operation very extensive destruction of the mastoid and exposure of the sigmoid sinus was found; very little granulation tissue in the middle ear and in the antrum. The tenderness which had existed over the antrum disappeared with the use of hot applications.

*Discussion.*—Dr. WHITING remembered the case. The man came to the clinic two weeks before, complaining of an acute purulent otitis media; he was admitted to the hospital and remained four days; the discharge was always slight. After the use of the ice-coil for 36 hours the tenderness disappeared and the



patient was permitted to leave the hospital. He returned later with intense tenderness over the mastoid and post-mastoid region; operation was recommended and refused. Dr. J. L. ADAMS thought that the use of the ice-coil might be responsible for the herpetic eruption.

Dr. C. J. KIPP asked for a **discussion on the use of the ice-coil in the treatment of mastoiditis.**

*Discussion.*— Dr. GRUENING has given up the use of the ice-coil as he believes that it simply masks the symptoms; hot applications are much better. Dr. J. L. ADAMS believes in the use of the ice-coil. He thinks that if it were not used we would do a great many unnecessary operations. Dr. BACON still uses the ice-coil but agrees with the opinion that when pus has formed its use is dangerous, especially in streptococcic infection. He has had very many fewer operations where the ice-coil has been judiciously used than with the use of hot applications. In simple cases of acute mastoiditis, he believes that the application of the Leiter coil is one of the best methods of treatment, especially after the drumhead has been freely incised. Dr. KIPP: Has the treatment been otherwise the same? Dr. BACON: The same. Dr. COWEN agrees with Dr. Bacon and believes in the intelligent use of the ice-coil for a limited time in the early stage, discontinued after thirty-six hours. Dr. GRUENING's experience had been diametrically opposed to that of Dr. Cowen. He favors the use of the hot bag. The ice-coil is unpleasant to the patient.

Dr. J. L. ADAMS wished to know what was Dr. Gruening's method of using the hot bag. Dr. GRUENING: A rubber bag is  $\frac{3}{4}$  filled with boiling water; the bag is then covered with from two to four ordinary towels, outside of which is then wrapped a Turkish towel. As the bag grows cooler the towels are successively removed, the temperature of the application being thus fairly well maintained for a considerable time. Dr. BERENS believes in the use of heat but prefers the moist form as a rule. Dr. FRIDENBERG thought that the ice-coil stopped the inflammatory process in the more superficial parts and drove it into the deeper, more important parts; however, it is of use in some cases. Dr. GRUENING thought that the use of the ice-coil was dangerous and that of the hot bag was not. Dr. BACON thought that frequently the statements of hospital patients were unreliable as to the duration of the disease, and as it is most important to apply the Leiter coil in the very first stage

of inflammation, we were therefore more apt to get better results in private practice. He had treated a great many private patients with the Leiter coil and he had never known of a relapse in any of these cases.

*Present.*—Drs. Cowen, Kipp, H. Knapp, Bacon, Duane, Wilson, Berens, Marple, Quinlan, Clemens, Toeplitz, J. L. Adams, Whiting, Hepburn, May, Fridenberg, Gruening, Sheppard, Lewis, Alderton.

REPORT OF MEETING OF JANUARY 23, 1900.

Dr. J. L. ADAMS presented a patient on whom **exsection of the jugular vein had been done for thrombosis of the lateral sinus**; with specimen.

The operation took one and a half hours and the man made a very rapid recovery, developing only one unpleasant complication—pleurisy with effusion, necessitating the drawing out of ten ounces of serum from the chest. The vein was cut midway between the mastoid and the clavicle, pulled down, and dissected off.

*Discussion.*—Dr. McKERNON asked if there was marked rapidity of the pulse and discoloration of the skin following the operation. He has noticed this rapidity of the pulse and marked blue discoloration of the skin over the side so operated upon. Dr. J. L. ADAMS: The pulse never went above 100. Dr. G. BACON was glad to hear the remarks of Dr. Adams with reference to the use of the hypodermic needle for exploratory purposes in sinus thrombosis. Dr. GRUENING called attention to the fact that the hypodermic needle was of no use in determining the presence of thrombus. Dr. Bacon advocates the free exposure of the sinus, then waiting twenty-four hours, and, if the symptoms do not abate, thorough opening of the sinus.

Dr. G. BACON presented a **microscopical section of the growth (sarcoma)** reported at the last meeting of the society as having been **removed from the external meatus**. Dr. WEEKS reported as follows: "The small tumor removed by you from the external auditory canal is a tumor of mesoblastic origin and belongs to the sarcomas. They are spoken of as alveolar sarcomas, also as endotheliomas, and endothelial sarcomas. Their malignancy is very slight." This opinion is concurred in by Drs. E. K. DUNHAM and GEO. SLOAN DIXON.

Dr. E. B. DENCH presented an **ear-trumpet**, consisting of a conical tube about twelve inches in length ; to the upper extremity of this is fixed a tip which can be removed, or can be turned at any angle, in order that it may be placed in the most advantageous position for any particular patient. The upper portion of this movable tip is bent at right angles to the elongated shaft. This instrument was first devised by Vallière of Paris. In Vallière's instruments the tube which served to collect the sound waves was made to take the place of the handle of an ordinary lorgnette. The lorgnette, however, could not be used while the tube was in the external auditory meatus. My own modification consists simply in so modifying the instrument, that the eye-glasses, either plain, or such as the patient wears, may be kept in position while the ear-trumpet is still in use. This, I think, is of no little value, as the attention is naturally turned to the eye rather than to the ear, and the presence of the apparatus used for the hearing is not noticed. The jointed arm which holds the eye-glasses can be removed ; the arm is flexible and can therefore be easily made to accommodate any patient. It goes without saying, that each instrument must be fitted, the same as in the case of eye-glasses, so that the patient may have no difficulty in bringing the instrument into the proper position. This device is made by John Reynders of this city, to whom I am indebted for the careful and conscientious work in the construction of the apparatus.

Dr. DENCH also presented a **tuning-fork stand**, designed to hold Bezold's continuous series of tuning-forks and whistles. It consists of a vertical shaft, about three and a half feet high, mounted on a triangular base. Upon this shaft are fixed three plates which hold the various forks. These revolve about the central shaft, so that any instrument can be removed at pleasure without disturbing the others. This applies not only to the forks but to the whistles and pipes as well. Bezold's series consists of fourteen tuning-forks, two closed pipes, and one whistle, also a hammer for setting the forks in vibration, and a thumb-wrench for changing the position of the clamps on the various forks. The desirability of the apparatus is : first, its compactness, as it occupies not more than eight inches of floor space, and, second, the readiness with which any particular fork can be found when desired. In this way it is quite as easy to make a complete examination with the Bezold series as to examine with only a few forks.

*Discussion.*—Dr. WHITING: What is the highest fork? Dr. DENCH: C<sup>6</sup>. Dr. WHITING: Is there a fork with 16 vibrations? Dr. DENCH: One with 15.

Dr. H. KNAPP showed the left half of **brain with an abscess in the temporal lobe**,<sup>1</sup> taken from a girl of twelve years, who had had otorrhœa from childhood, and an aggravation of her o. m. p. c. during the last four weeks of her life, with pain in head, nausea, and vomiting. December 17, 1899, at 6 P.M., she became unconscious and had violent convulsions for six hours. For the next two hours she was excited and screamed. Dr. K. saw her in consultation with the family physician December 18th at 1:30 P.M. She was frightened but rational. Little discharge in ear canal, no sagging of post.-upper wall, slight swelling and tenderness of mastoid. No optic neuritis; acuteness and field of vision normal but optical amnesic aphasia pronounced. Clinical diagnosis: *deep mastoid caries, epidural and cerebral abscess, with beginning meningitis*. Operation the same day at 6 P.M. Mastoid carious; cleansed. Posterior cranial fossa opened, dura mater and sigmoid sinus exposed; healthy. Posterior meatal wall chiselled away; attic filled with cholesteatoma; the carious and necrosed roof of attic removed. The dura of middle cranial fossa, laid bare about 2 cm in diameter, was but slightly thickened and red, not pulsating. In the posterior lower part was a round blackish patch of 3 to 4 mm in diameter, with a small perforation in the centre, through which a probe was introduced into the brain 4 to 5 cm up and inward, without meeting with any resistance, and without escape of pus or blood when withdrawn.

Dr. K., though not doubting the presence of an abscess in the temporal lobe, interrupted the operation, in order to await symptoms pointing more definitely to its location. The next two days the patient felt a great deal better, she talked fluently and rationally, and named correctly all objects held before her. In the third night she had headache and some vomiting, and during the day she failed to name several objects. Pulse had always been between 80 and 110, only in the last evening it sank to 60, temperature between 99° and 102°. The fourth night was good; in the afternoon of the fifth day she felt pretty well; chatted, had an appetite, no optic or other aphasia. Dr. K. and the family physician thought that the supplementary operation, *i. e.*, to expose and incise the brain from the fistula in the dura, should be done the next day. This was consented to.

The patient awoke at 9:45 P.M., shook and screamed for five minutes, and suddenly died.

The *autopsy*, made in the afternoon, revealed a very large abscess in the temporo-sphenoidal lobe, which had broken into the lateral ventricle. It had a dense capsule, was surrounded by softened

<sup>1</sup> Detailed description in this number of the ARCHIVES, No. 1, vol. xxix., p. 46.



brain substance. The left lateral and the third ventricle contained the same offensive, thin, and grumous pus which filled the abscess cavity.

*Discussion.*—Dr. BACON: The pus was not very thick? Dr. KNAPP: No, it was thin and grumous. Dr. BACON: In one of my cases the pus was very thick; it had to be washed out. Dr. H. KNAPP: The softened tissue explains the optic aphasia. Dr. GRUENING thought that where there is optic aphasia the abscess is generally posterior. Why did not Dr. Knapp aspirate? He thought aspiration was necessary. Dr. H. KNAPP acknowledged that the further course proved that the abscess should have been opened at the first operation. He would, however, have preferred incision. Aspiration was uncertain. Very few used the syringe now. Dr. KIPP: Dr. Macewen uses a blunt-pointed canula. Dr. DENCH thought that the knife was preferable. Valuable time is often wasted by using the aspirator or canula, and palpation is rendered possible by the use of the knife. Dr. GRUENING: Do I understand that Dr. Dench would enter the brain with the finger before he has found the abscess? Dr. DENCH: Yes, following a small incision with the knife. Dr. GRUENING thought that the aspirating needle should precede the knife. Dr. DENCH: Time is important and, therefore, is a reason for using the knife.

Dr. C. H. MAY presented a portion of a brain showing an **abscess in the temporo-sphenoidal lobe**. He gave the history of the case and described the operation. There was no change in the mastoid except eburnation. The attic was filled with pus and cholesteatoma. The abscess was successfully evacuated at the operation, but the patient died the following morning. The case was another instance in which the patient had presented herself for operation at a period which was too late to save life. A full report is given in this number of the ARCHIVES.

*Discussion.*—Dr. KIPP: Was there no discoloration of the dura; no continuous tract between the tegmen and the abscess? Dr. MAY: None. Dr. KIPP: Often when we first remove the brain the dura may not show any discoloration, but after having been kept in alcohol for a few days the discoloration manifests itself. Dr. J. L. ADAMS: Did I rightly understand Dr. May to say that he had usually found the pus from a brain abscess to be offensive? Dr. MAY: No; only often. Dr. BACON: Did Dr. May enter the antrum? Dr. MAY: No, for time was valuable and the diagnosis



pointed to abscess of the brain. Dr. BACON: In almost all these cases there is usually a small opening through the tegmen, often difficult to discover.

Dr. MCKERNON reported a case in which, after considerable searching, he found a sinus leading into the aditus.

Dr. GRUENING: I believe that there was in Dr. May's case a perforation of the tegmen. Dr. MAY: Yes, but no communication with the abscess. Dr. KIPP: Neurologists believe that otologists waste too much time in the preliminary operation; they think we should first open the abscess and then do the radical operation. Dr. J. L. ADAMS had seen two cases in which such was the procedure; in both there was a mistake in diagnosis, both being cases of sinus thrombosis. Dr. DENCH thought that we should make a very large opening in the skull, so as to expose all the regions it may be necessary to explore.

Dr. WHITING had a case two years ago, of subdural abscess following o. m. p. a., without perforation. No history; patient was comatose. He opened the skull quickly, so as to expose the tegmen of antrum, aditus, and tympanum. Could find no fistula. Aspirated the dura and found pus; the dura was then slit up, with the evacuation of more pus. Exploration of the brain with the knife was negative. Twenty-four hours later leptomeningitis developed, and death. At autopsy a fistulous tract was found.

Dr. ARNOLD H. KNAPP **demonstrated the temporal bone of a man**, thirty years old, who had died at one of the general hospitals in New York soon after admission. The sigmoid sinus contained a complete **parietal thrombus**; a part of the sigmoid groove and the adjacent dural wall of the sinus were diseased and covered with granulations; the mastoid antrum was very much enlarged and filled with cholesteatoma; a subdural abscess was situated on the posterior surface of the petrous pyramid, internal to the sinus. The ear had not been operated upon, and the man died from a septic pneumonia and acute empyema.

Dr. QUINLAN reported **a case of post-auricular abscess, with sudden death**. The classical mastoid operation was done and pus was found in the mastoid. The antrum was very large and filled with granulation tissue. Two hours after the operation the child suddenly died. There was no heart lesion. No autopsy was permitted.

*Discussion.*—Dr. FRIDENBERG: Was the fundus of the eye examined? Dr. QUINLAN: No.

Dr. GRUENING reported a case recently of a child, 5 years old, with a retro-auricular abscess. Usual operation. The dura was softened; fistula; brain abscess. Evacuated the abscess and saved the child. Dr. KIPP: Was ether or chloroform used? Dr. QUINLAN: Chloroform first and then ether. Dr. DENCH thought that these cases of sudden death are very frequently due to rupture of the abscess into the lateral ventricle. Dr. BERENS questioned whether an embolus might not have been responsible. Dr. DENCH: No such case has been reported. Dr. BERENS: We have it in general surgery. Dr. DENCH: Yes. Dr. WILSON: In a case of retro-auricular abscess he found the pus outside of the periosteum; none under the periosteum. Dr. DENCH: Perhaps this was a case of ordinary furuncular abscess. Thought that a post-auricular swelling was more indicative of furunculosis than of mastoiditis, except in infants. Dr. WHITING thought that the pus may have perforated the periosteum at the brim of the external auditory orifice.

Dr. GRUENING **recalled the case of mastoiditis with herpes** reported at the last meeting. The patient died of meningitis. Dr. SACHS examined the case and saw nothing indicative of meningitis; he did not know that herpes was a prodromic symptom of meningitis in such cases. The man did well at first; suddenly his temperature rose to  $105^{\circ}$  and he became unconscious. Operation: Opened sinus, negative; exposed dura, negative; explored cerebrum and cerebellum, negative. The man died. Autopsy: Basilar meningitis. The streptococcus was found in the otorrhœa, mastoid, and the meninges. This was the third case, complicated by herpes, seen by Dr. Gruening, all terminating fatally.

*Present.*—Drs. Clemens, Kipp, Berens, J. L. Adams, H. Knapp, A. H. Knapp, Whiting, Marple, Bacon, Duane, Wilson, Emerson, Fridenberg, McKernon, Hepburn, Gruening, Quinlan, Dench, May, and Alderton.

REPORT ON THE PROGRESS OF OTOTOLOGY DURING THE THIRD QUARTER OF THE YEAR 1899.

BY DR. A. HARTMANN.

Translated by Dr. ARNOLD H. KNAPP.

ANATOMY OF THE EAR.

193. PANSE, R. On the comparative anatomy and physiology of the organ of equilibrium and hearing. *Klin. Vortr. aus dem Gebiete der Otologie*, etc., 1899.

194. ALEXANDER, G. A case of persisting stapèdial artery in man. *Monatschr. f. Ohrenheilk.*, No. 7, 1899.

195. V. STEIN, S. A new method of bone-corrosion specimens by means of hard rubber. *Anat. Anzeiger*, xv.

193. A review of the physiology of the various parts of the labyrinth based on comparative anatomy, experiments, and clinical observations, illustrated with drawings and tables. BRÜHL.

194. In a case of human double monster, a blood-vessel arose from the internal carotid, passing along a bony canal in the floor of the tympanum, from the promontory through the stapes to the roof, appearing at the base of the skull from a spurious canal terminating in a lateral branch, replacing the mid. mening. artery and a median branch anastomosing with the orbital vessels ending on the surface of the large sphenoidal wing. KILLIAN.

195. The injection material is the pink rubber used by dentists, which is soluble in chloroform. The soft mass becomes hard in a vulcanizing apparatus. The advantages of the method are cheapness, rapidity, lightness, and firmness of the specimens, and demonstration of the entire spiral lamina. HARTMANN.

PHYSIOLOGY OF THE EAR.

196. HAMMERSCHLAG. On the reflex movements of the tensor tympani and its central paths. *Sitzungsber. der Wien. Akad. math.-naturw. Cl.*, Bd., cviii., Abth. iii., p. 1.

197. OSTMANN. The function of the stapedius muscle in hearing. *Arch. f. Anat. und Physiol.*, p. 546, 1899.

198. ALT and BIEDL. Experimental investigations on cortical hearing. *Monatsch. f. Ohrenheilk.*, No. 9, 1899.

196. HAMMERSCHLAG tries to answer the following questions experimentally. Is the contraction of the tens. tympani in dogs, which has been observed by several investigators, a reflex passing through the auditory nerve, and originating in sound waves. If so, what kind is it, and what anatomical paths does it follow? The first question is answered affirmatively by the author's experiments. In addition to the tract between the eighth and fifth nerve nuclei on the same side, there is one between the eighth nerve nucleus of the one and the fifth motor nucleus of the other. Contractions of the tensor tympani occur after removal of the entire brain cortex, hence it is a pure reflex process. The path of this reflex was previously entirely unknown. Hammerschlag attempts to follow experimentally in the cat the path from the acoustic nucleus to the motor root of the fifth. The first part has been determined. The author believes this also to be the way of the tensor reflex in man. BLOCH.

197. The acoustic action of a slight relaxation of the drum membrane is an increase of tone according to Helmholtz and others. Such a relaxation follows the contraction of the stapedius from Politzer's experiments. Sherrington and Hering have shown that a contraction of the stapedius does not cause contraction in the tensor tympani. The stapedius makes only a single spasm, not a continuous contraction. In the "Laucher," Gottstein found that the stapedius contracted when the other muscles supplied by the facial nerve contracted. OSTMANN says this is only momentary at the moment of attention and not a continuous, tetanic one. Ostmann found this momentary contraction to take place in a dog who showed a movement of his drum whenever a cat miawed in the same room. BLOCH.

198. ALT and BIEDL destroyed one or both cochleæ in young dogs and compared their behavior to normal dogs. In other dogs the temporal lobes, or one temporal lobe and one cochlea,

were removed. The results showed that the destruction of the temporal lobe on either side was followed by reaction only to strong auditory impressions for the two first days ; during this period the hearing power was especially weakened on the opposite side. On the ninth day the impairment had disappeared completely. Destruction of both cortical auditory centres caused deafness for ten to twelve days only, then a gradual recovery took place. A complete review of the literature is appended.

KILLIAN.

#### GENERAL.

##### a.—REPORTS AND GENERAL COMMUNICATIONS.

199. GRUNERT and ZERONI. Annual report of the university ear clinic in Halle-a.-S. from April 1, 1897, to March 31, 1898. *Arch. f. Ohrenheilk.*, vol. xlv., p. 153.

200. STEIN. Examination on the hearing organs of engine-drivers and on the hearing of acoustic signals. *Nordiskt Medicinskt Arkiv*, No. 8, 1899.

201. HECHT. Results of the examination of the deaf-mutes in the asylum at Ratibor. *Arch. f. Ohrenheilk.*, vol. xlvii., p. 57.

202. LANNOIS. Medico-legal examination of the ear of Vacher, the murderer. *Annal. des mal. de l'oreille*, etc., November 1, 1899.

199. In this report, prepared with the usual care, the authors again bring up the question of primary closure of the retro-auricular wound in the radical operation and again recommend the general leaving open of the wound. The persistent retro-auricular fistula is, however, not so much in use as formerly, as the flap in the membranous canal is carried out into the concha. During the dressing through the canal this opening is gradually enlarged by using large aural specula.

BLOCH.

200. STEIN examined 44 stokers and 38 locomotive-drivers. Otoscopically 3 were normal. In the first group, 1-9 years of service, 33.2 per cent. were deaf ; in the second, 10-19 years, 37.5 per cent., and in the third, 20-38 years, 61.11 per cent. In 11.73 per cent. of the examined ears disease of the sound-conducting apparatus, and in 48.33 per cent. disease of the perceiving apparatus was diagnosticated. While riding on an engine all could hear the acoustic signals under favorable conditions except the whistle. He believes that there should be a limit beyond which service of stoker or driver cannot be entered upon.

HARTMANN.



201. Of 286 inmates, 23 per cent. showed abnormal eyes; of these 9 per cent. strabismus and 8 per cent. astigmatism. Of 103 born deaf, 35 per cent. had diseased eyes; of these 12 per cent. strabismus, and 14 per cent. astigmatism. BLOCH.

202. LANNOIS examined the ears of the executed murderer Vacher. This man had shot a revolver bullet in his ear some time before his murders, and thereafter suffered from fœtid otorrhœa, loss of hearing, and facial paralysis on that side. The bullet was found imbedded in the inner wall of the tympanum. According to the author ear disease may cause epilepsy and attacks of mania. These cases are rare, and are always accompanied by transient aggravation of the ear trouble, which was not the case in Vacher, whose mental condition was uninfluenced thereby. SCHWENDT.

b.—GENERAL SYMPTOMATOLOGY AND PATHOLOGY.

203. WEIL. Scarlet fever and scarlatinal diphtheria in their relation to the ear. *Klinische Vorträge aus dem Gebiete der Otologie*, etc., vol. iii., p. 63.

204. DANZIGER. Can defects of the drum membrane cause sudden death in the bath? *Monatschr. f. Ohrenheilk.*, No. 9, 1899.

205. HAUG. A case of malignant tumor of the temporal bone with histological examination. Endothelial carcinoma with paralysis of recurrent and hypoglossal nerves, invading the cranium. *Arch. f. Ohrenheilk.*, vol. xlvii., p. 113.

206. NADOLECZNY, M. Endothelioma of the temporal bone. *Ibid.*, p. 126.

207. FRUITNIGHT, J. HENRY. Otitis of the exanthemata from the standpoint of the pediatrician and general practitioner. *Medical News*, July 1, 1899.

203. WEIL discusses the ear complications of scarlet fever chiefly with aid of the existing literature. He claims that this complication is present in 10 per cent. of the cases. Treatment is fully described. No mention is made of the not infrequent presence of diphtheria bacilli in the otorrhœa.

HARTMANN.

204. DANZIGER has observed a case of severe tinnitus from water entering the middle ear, which causes him to answer this question positively. KILLIAN.

205. Described in the title. BLOCH.

206. A sarcoma finally leading to death from meningitis.

BLOCH.

207. Of nearly five thousand cases of the exanthemata, especially scarlet fever and measles, the writer has met with otitis media as the most frequent complication. Of these patients, fully one third were victims of this particular complication. The frequency of the occurrence of otitis media was not in direct ratio to the severity of the general infection, for very often this complication was observed in cases of a very mild character. He urges the importance in every case of the eruptive fevers of watching the ears of the patients, and says that he has often cut short an attack, or at least mitigated its severity and preserved the patient's hearing, by at once treating this complication at its very commencement

GORHAM BACON.

#### C.—METHODS OF EXAMINATION AND TREATMENT.

208. LUCÆ. The physical determination of one-sided deafness. *Arch. f. Ohrenhkl.*, vol. xlvii., p. 101.

209. STUMPF. The determination of high numbers of vibrations by differential tones. *Ann. d. Phys. u. Chem.*, vol. lviii., p. 105.

210. BARATOUX. The unification of the measures of hearing. *La pratique medicale*.

211. BOMRIER. Hearing tests. *Rapport du Congrès d'Otologie*, May 1, 1899.

212. BARTH. The percussion of the mastoid process. *Arch. f. Ohrenhkl.*, vol. xlvii., p. 107.

213. OBRASZOFF. A case of eclampsia following incision of the drum membrane. *Monatschr. f. Ohrenhkl.*, No. 7, 1899.

214. BURNETT, C. H. Pneumo-massage of the external auditory canal compared with inflation of the tympanum. *University Med. Magazine*, Aug., 1899.

208. LUCÆ employs a T-shaped tube, of which one branch is connected by a 3-cm-long piece of rubber tubing to the ear to be tested for deafness. In the opposite branch, tuning-fork A is fastened. From the long extremity, tubing 50 cm long goes to the healthy ear. In the latter the tone of the fork is heard louder when the short tube is connected with the deaf ear than when it is open. If both ears are good, a momentary increase in tone is

heard in the nearer ear, followed by an even tone heard in both. The test is only applicable for the tone used in the examination.

BLOCH.

209. STUMPF'S paper follows the one which showed that the pitch of Appun's high organ pipes was incorrect. A number of these pipes between  $c^5$  and  $c^8$  were examined by the differential method; the  $c^5$  pipe alone was correct, while the higher ones up to  $c^8$  were much too low; all are situated in one and the same octave, instead of in three. The method to measure high places of the scale by the observation of definite difference tones arising in definite intervals is comparatively simple and reliable.

BLOCH.

210. BARATOUX is in favor of the German method of double counting of the tuning-fork vibrations, and for the general use of Bezold's forks and the determination of the hearing acuity according to suitable proportions.

BRÜHL.

211. The usual hearing tests with tuning-forks are described with preliminary physiological remarks, in which Helmholtz's theory is given up. "Paracousie de Weber" is an experiment where the fork placed on the knee is heard in the ear in disturbances of the sound-conducting apparatus.

BRÜHL.

212. BARTH considers percussion of the mastoid to be without value. In a case of normal drum and hearing, the right mastoid was opened, because patient complained of an enlargement of the same. The mastoid gland was enlarged, the process was normal.

BLOCH.

213. During paracentesis on account of acute otitis media, general muscular contractions, coma, dilatation of pupils, set in. The patient was a man, thirty-two years of age.

KILLIAN.

214. In a paper, read by title, at the meeting of the American Otological Society, in July, 1899, BURNETT draws the following conclusions:

Pneumo-massage applied to the external auditory canal and membrana tympani, and immediately to the ossicles of hearing, in both acute and chronic catarrhal processes in the middle ear, is more efficient, less of a shock to the auditory nerve, more agreeable to the patient than inflation, and entirely free from sepsis, whereas inflation is not. Inflation of the tympana being very rarely necessary as a means of forcing air into the middle ears, the latter being very seldom in need of it, it is fair to

conclude that inflation of the tympana, as it must be applied to both ears, whether desired or not, is usually contra-indicated in aural diseases.

On the other hand, as drawing the membrana tympani and malleus outward, and traction on the tensor tympani, and restoration of the normal isolation of the auditory ossicles are desired, without any shock to the structures upon the inner wall of the drum cavity, and as this can be so safely effected by pneumatic rarefaction of the air in the auditory canal, pneumo-massage is indicated for this purpose. In fact, some form of pneumo-massage of the external ear has almost entirely superseded the use of all forms of inflation of the tympanum in my hands, during the past ten years.

GORHAM BACON.

#### EXTERNAL EAR.

215. LAUBINGER. On othæmatoma and perichondritis. *Arch. f. Ohrenhkl.*, vol. xlvii., p. 135.

216. SPIRA. On artificial, mechanical, and organic closure of the dry perforation of the drum. *Przegląd Zekarsi*, Nos. 27-29, 1899.

217. POWELL, A. Keloid nature of the "fibrous" tumors of the auricle. *Indian Med. Gazette*, August, 1899.

218. CARROLL, J. J. Compound comminuted fracture of the osseous wall of the external auditory canal. *Four. of Eye, Ear, and Throat Diseases*, July, 1899.

215. In two butcher boys, a serous or sero-bloody extravasate took place in the right auricle, which disappeared after treatment. A history of traumatism is present, but so slight that no hemorrhage occurred. In addition, three cases of perichondritis are described with thickening of the auricle after trauma and coagulation.

BLOCH.

216. SPIRA recommends the treatment of dry perforations, with 10-60 per cent. trichloracetic acid.

POLLAK.

217. POWELL thinks that the keloid nature of these tumors is proved by :

- (1) Their histology.
- (2) Their origin in a scar.
- (3) Their recurrence after excision.
- (4) Their greater frequency in dark races.
- (5) Frequent co-existence of keloid on other scars in the same patient.

ARTHUR CHEATLE.

218. The patient, aged thirty-two, was thrown from a wagon and fell upon a granite block pavement on his chin. There was immediate hemorrhage from the ear, with pain, and a feeling of fulness. The two lower canine teeth were chipped, and in the external meatus, about 2 cm from the tragus on the anterior inferior wall, there was a reddish and hard elevation, extending directly upwards to within 4 or 5 mm of the superior wall, backwards to the posterior wall and barely touching it. The bone was denuded. Conjointly with the opening and closing of the mouth, the elevation in the canal moved back and forth. The hearing was but slightly affected. GORHAM BACON.

#### MIDDLE EAR.

##### a.—ACUTE OTITIS.

219. LEUTERT. Bacteriologic and clinical studies on the complications of acute and chronic purulent otitis media. *Arch. f. Ohrenheilk.*, vol. xlvii., p. 190, and vol. xlviii., p. 1.

220. PASSOW. The treatment of acute otitis media; the treatment of chronic exsudative otitis media. *Die Therapie der Gegenwart*, July and Sept., 1899.

221. DELSTANCHE. The importance of the ophthalmoscopic examination in purulent ear-disease. *Bull. de la soc. belge d'ot.*, Brussels, 1899.

222. BLAKELY, D. N. Acute middle-ear inflammation as a complication of scarlet fever and measles. *Arch. f. Pediatrics*, July, 1899.

219. In this excellent historical and critical review, LEUTERT defines the present position of the bacteriology of the middle ear. The author's own bacteriological examinations in acute and chronic mastoid empyema, epidural abscess, periauricular abscess, brain abscess, and sinus thrombosis are described.

In mastoid empyema after acute otitis Leutert found in 62 cases, 38 times streptococcus in pure culture, 11 times pneumococcus, 5 times staphylococcus albus, and twice pure tuberculosis. In epidural abscess after acute purulent otitis, of which 10 cases were examined, 6 times pure pneumococcus was found, and twice streptococcus. In three cases of acute empyema with sinus thrombosis, pure streptococcus was found present three times. In four cases of auricular perichondritis, the bacillus pyocyaneus was alone present in pure culture.



Leutert, just as other authors, regards the pneumococcus as clinically a rather benign microbe ; as the middle-ear trouble more rapidly resolves, the destruction in mastoid involvement is less extensive, and the temperature more rarely and not so much affected, and the operative cases heal more quickly. The comparatively frequent epidural abscess in pneumococcus infection (circumscribed purulent collections connecting with the middle ear by a narrow fistula), seven in ten cases, Leutert explains by the slight destructive agency of this suppuration. In streptococcus infections the bony tissue is more quickly disintegrated, and a freer communication exists between the focus in the cranial cavity and the primary focus. The pneumococcus suppuration in the middle ear and even in the mastoid may have ceased at the time when the symptoms of the epidural abscess appear.

The relative benignancy of the pneumococci may be explained because they usually start up the aural suppuration when in an attenuated condition, as Maggiora and Gradenigo and Herzog have shown.

Leutert agrees with Netter that the sinus thrombosis is exclusively caused by the streptococcus. In brain abscess this same microbe was found four out of seven times, but only once in pure culture. It was also present in scarlatinal suppuration, though Leutert believes secondarily.

Aural suppurations become chronic, according to Lermoyez, Helme, and Leutert, to the pyogenic staphylococcus, especially the staph. alb., and to saprophytes. Opposed to these authors, Leutert believes the exacerbations and relapses to follow from the naso-pharynx more than the aural canal, and naso-pharyngeal catarrh, adenoids, and others should be treated prophylactically against chronic otitis. It has been known for some time that the staphylococci keep up chronic suppuration ; they replace the agent of the acute inflammation.

It is noteworthy that the bacillus pyocyaneus was found in pure culture in the four cases of perichondritis ; Leutert is inclined to consider it the sole cause.

In a short clinical part, Leutert repeats the facts that pneumococcus inflammations cease rapidly, and that after weeks, when the otorrhœa has ceased, the mastoid or epidural suppurations may begin. If pneumococci are found in the discharge in these regions, the suppuration may be assumed to be acute in other uncertain conditions. The original otitis may even remain

unrecognized, thus mastoiditis would be regarded as primary. These primary mastoid affections are questionable according to the author.

BLOCH.

220. In these two papers PASSOW, after remarks on the pathology, discusses the treatment for the purposes of the general practitioner. The importance of ear disease is sufficiently emphasized, especially the influence of chronic suppuration on the rest of the organism.

BLOCH.

221. After a review of the special literature the author gives the results of ophthalmoscopic examination in fifteen cases of purulent otitis media without endocranial complication. The results were negative, hence author believes that neuritis optica must be very rare in absence of endocranial complication.

BRÜHL.

222. According to the statistics of BLAKELY, 22 per cent. of the scarlet-fever patients and 45 per cent. of the measles patients had an ear complication. Of 649 patients, 86 had acute middle-ear inflammation. His conclusions are as follows :

1. Acute middle-ear inflammation occurs a little oftener in measles than in scarlet fever.
2. In scarlet fever, though a frequent complication in children, it is rare in adults.
3. In measles, though more frequent in children than in adults, it is by no means uncommon in the latter.
4. It may begin at any time in the course of the disease.
5. All grades of severity are met with.
6. Early treatment tends to shorten the course of the inflammatory process.
7. So far as danger to life is concerned it is not a serious complication.

GORHAM BACON.

b.—CHRONIC PURULENT OTITIS.

223. STEBBER. The conservative treatment of chronic purulent otitis. *Berl. klin. Wochenschr.*, Nos. 37 and 38, 1899.

224. VACHER. Treatment of acute and chronic suppurative otitis with formol. *Annal. des malad. de l'oreille*, etc., No. 1, 1899.

225. SOMERS, L. S. Xeroform in chronic purulent otitis. *Wien. med. Presse*, No. 39, 1899.

226. LUCAE. On carious and traumatic lesions of the labyrinth with especial regard to the symptoms of vertigo and absence

of Weber's test ; a few technical remarks on the so-called radical operation. *Arch. f. Ohrenhkl.*, vol. xlvii., p. 85.

227. HAAG. A case of necrosis of the cochlea. *Ibid.*, p. 125.

228. GOLDSTEIN. Modern therapy of the tympanic cavity. *N. Y. Med. Journ.*, July 29, 1899.

223. The means of avoiding the radical operation, according to this author, consist in the instillation of 2-per-cent. solution of iodine-potassium iodide with addition of lipsol ; introduction of chinolin-naphthol gauze tampons ; irrigations of menthoxol solution in fetid otorrhœa ; granulations to be removed with the snare or trichlor-acetic acid. The treatment is applicable "only in cases where no symptoms of mastoid involvement are present." An operation appears to be indicated in all these cases to the author "though the necessity of always exposing the mastoid antrum is still undecided, as with Wilde's incision I have been able to cure the otorrhœa in a number of patients with chronic purulent otitis and mastoid periostitis." (!) MÜLLER.

224. Formol, undiluted, is very painful to mucous membrane. The author employs a 5-10 per cent. solution in which the gauze for the ear is soaked. The remedy is applied daily after cleansing, caution being had lest any of the liquid should enter the pharynx. VACHER has obtained excellent results with it. SCHWENDT.

225. The ear canal and the middle ear are cleansed with hydrogen peroxide and cotton tips after removal of all granulations ; the xeroform powder is lightly dusted on and a gauze drain is introduced, the ear covered by a pad of cotton for one to two days. SOMERS succeeded in curing or improving cases where other methods had failed. POLLAK.

226. LUCAE describes fifty cases of carious lesions of the labyrinth, almost always at the horizontal canal. Vertigo was present in 60 per cent. of the cases, together with nystagmus in 22 per cent. The author warns against the one-sided opinion that vertigo in otorrhœa is always due to this lesion. Weber's test he considers of no differential value in diagnosis. BLOCH.

227. Right chronic otorrhœa with pain, vomiting, and loss of hearing. Radical operation. Caries of the outer wall of attic, at the aditus, hammer, and anvil and at a place above promontorium. Subsequently carious stapes and entire cochlea were exfoliated. No facial paralysis. BLOCH.

228. GOLDSTEIN believes that the otologist of the present day is inclined to institute radical operative measures for the cure of suppurative diseases of the middle ear where a more conservative treatment is indicated. He is opposed to the frequent use of the syringe in suppurative cases where the perforation is large, for fear of disseminating infectious material into remote and healthy areas. He also thinks that too frequent syringing favors granulation and polypus formation, and is opposed to the use of the middle-ear syringe except in cases of mild cholesteatoma. In chronic suppurative otitis media, where no pain or discomfort exists, he uses the Eustachian catheter in connection with a nebulizing or vaporizing apparatus. He prefers nosophen to the other powders. Where the discharge is profuse he adds to the treatment packing of sterilized gauze.

GORHAM BACON.

c.—CEREBRAL COMPLICATIONS.

229. SCHÖNGUT. A case of otitic sinus thrombosis; operation; recovery. *Wien. med. Wochenschr.*, No. 33, 1889.

230. PHELPS, CHARLES. Otitis media; cerebral abscess. *N. Y. Med. Jour.*, July 8, 1899.

231. MAYNARD, F. P. Cerebellar abscess, trephining; death. *Indian Med. Gazette*, August, 1899.

232. BACON, GORHAM. On the importance of an operation in the first stage of thrombosis of the sigmoid sinus (following acute purulent otitis media), with a report of three cases. *N. Y. Med Jour.*, July 1, 1899.

233. YOUNG, ARCHIBALD. Remarks upon the operative treatment of infective thrombosis of the sigmoid sinus following chronic purulent otitis media. Record of a case successfully treated. *The Glasgow Med. Jour.*, October, 1899.

229. Bilateral acute otitis. Paracentesis on fifth day. Rigors continue from the third day. On the eighth day pain in the head, especially in occiput, back and sides of neck tender. Ophthalmoscope revealed venous congestion in right eye. The right jugular felt cold-like to the clavicle, and diagnosis of sinus thrombosis was made. The antrum was exposed on the following day, the sinus laid bare and incised, a few drops of dark blood were evacuated. The sinus was thrombosed above and below as detected by the probe. No further rigors; healed in four weeks.

POLLAK.

230. The patient was a young man, twenty-five years of age, who had had otitis media for some time. He was taken suddenly ill and had lost consciousness almost immediately. A diagnosis at this time was made of meningitis from infection through the petrous portion of the temporal bone. No operation was performed at this time. After a time symptoms of cerebral abscess developed, and among these was descending neuritis. PHELPS then trephined over the ear and found nothing, so the operation was abandoned. The patient died about four weeks later. At the autopsy it was ascertained that there had been an acute purulent meningitis involving the lower surface of the cerebellum and the anterior surface of the pons, and extending into the spinal canal. The path of infection had been through the tympanic roof and choroid plexus into the opposite lateral ventricle.

GORHAM BACON.

231. A sailor, aged eighteen, came under MAYNARD'S care on August 1, 1899, with a history of three days' fever.

Temp.  $40.5^{\circ}$ , severe general headache, much lassitude, constipation of two days' duration, vomiting once on each of the previous days, moist, thickly coated tongue, good appetite.

A discharge from the left ear had been present for some time. No swelling or tenderness behind the ear.

Pupils normal when exposed to the light, but when shaded the left was a little smaller.

On August 3d some shivering, temp.  $40.5^{\circ}$ ; August 4th the headache went, and the temp. fell from  $41.4^{\circ}$  to  $37.2^{\circ}$ ; August 5th and 6th seemed better. On the evening of August 7th some giddiness and headache. On the 9th his pulse fell to 60, the temp. rose to  $38.6^{\circ}$ , and he became unconscious; the right pupil being larger than the left, neither responding to light. The muscles of the neck were rigid, and those of the right arm slightly so. The breathing became stertorous and then Cheyne-Stokes in character. Operation was undertaken, a drop of pus being found in the antrum. None was found in the cerebrum or cerebellum, although both were explored with a hypodermic needle.

*Post-mortem.*—An abscess the size of a tangerine orange was found in the front of the left cerebellar hemisphere, and must have been entered by the needle. The lateral sinus contained fibrinous clots. The mastoid process was sclerosed.

ARTHUR CHEATLE.

232. In the three cases reported, the complications, viz.,



mastoid disease and thrombosis of the sigmoid sinus, followed acute purulent otitis media.

The first case was a boy, seven years of age, who had an earache due to cold and tonsillitis. In spite of the treatment, which consisted in the use of the artificial leech, the Leiter coil, and a free incision in the drumhead, the inflammation extended from the mastoid cells to the sigmoid sinus. The sinus was opened just one week after the commencement of the earache and a soft thrombus was removed.

In Case 2 ten days elapsed between the first symptom of earache and the operation on the sigmoid sinus, while in Case 3, eleven days after the beginning of the attack, a broken-down thrombus was removed, showing that in eleven days' time after the first symptom of earache pus may be found in the sigmoid sinus. The conclusions are as follows :

1. The impropriety of giving antipyretics in all cases of suppurative otitis media.
2. The value of a bacteriological examination of the secretion from the external auditory canal in all cases of suppurative otitis media.
3. The importance of operating at the earliest possible stage after a diagnosis of thrombosis has been made.
4. The use of the normal saline solution during the operation for sinus thrombosis or immediately following it.

233. The case was that of a child aged two and a half years. The sinus, being found locally thrombosed where it bends downwards and inwards towards the jugular fossa and bulb, was opened for about three quarters of an inch and a quantity of fœtid, dark-grayish, partly disintegrated clot was removed, and a strip of iodoform gauze inserted. No attempt was made to remove the whole thrombus. The jugular vein was not tied. Recovery.

ARTHUR CHEATLE.

d.—OTHER AFFECTIONS.

234. HAIKE. Foreign bodies of unusual imbibition lodged in the tympanum in chronic purulent otitis. *Deutsche med. Wochenschrift*, No. 27, 1899.

235. BREITUNG. Treatment of chronic progressive deafness with frequent vibratory massage of the drum with the electromotor. *Monatschr. f. Ohrenheilk.*, No. 8, 1899.

236. JALDA. Atresia of the Eustachian tube. *Wiener med Wochenschr.*, Nos. 25, 26, 1899.

237. STUCKY, J. A. Fracture of base of skull, with deafness, tinnitus, vertigo, exophthalmos, facial paralysis, mastoiditis; operation; recovery. *Louisville Monthly Jour. of Med. and Surg.*, Aug., 1899.

234. A black, firm foreign body was found at the depth of the ear canal in a girl æt. ten, with otorrhœa, and was taken for a sequestrum. At the radical operation the foreign body lodged in the hypotympanic recess; was extracted and proved to be cinnamon by odor and later microscopically. This substance must have swollen from the starch granules it contained to reach its present size.

NOLTENIUS.

235. BREITUNG gradually increases and diminishes the force of the massage. Injection of the hammer neck is a sign to stop. This massage is advised for cases of sclerosis and especially for the subjective noises. The author has had good results.

KILLIAN.

236. A girl of sixteen, complained of tinnitus and slight deafness referable to the middle ear. On examination: *Mt* very transparent, pearl gray, slightly retracted; pharyngeal end of tube flattened, grayish red, and smaller. Catheter can surely be made to enter tube, but no air can be forced in; a tubal bougie stops 2-3 mm beyond tip of catheter and meets a firm tissue. Siegle's speculum permits only slight mobility of the drum. The aural manometer shows no change on catheterization or Politzeration. According to the author, the slight changes in the drum and hearing can be explained by the possibility of air ventilation through the drum and the tube.

POLLAK.

237. The patient, a jockey, was violently thrown from his horse, striking his head. When he recovered consciousness, he complained of great noise in the right ear with some deafness. No hemorrhage from the nose or ear. A week later the deafness became very marked and he complained of great tinnitus and vertigo. There was also facial paralysis on the same side. Also exophthalmos of the right eye with several hemorrhagic spots in the deep conjunctiva and some dimness of vision. Temperature 101° F.; pulse 72. The auditory canal was red and swollen with a bulging of the posterior superior wall. The membrana tympani was lacerated in the upper segment. The middle ear was filled with clotted blood and the mastoid was tender. A Schwartze-Stacke

operation was performed and the antrum and cells were found filled with adherent blood-clots. The malleus and incus were hanging loosely. The mastoid wound was treated in the usual way after all the clots had been removed. The patient made a good recovery.

GORHAM BACON.

#### NERVOUS APPARATUS.

238. STEIN, V. Lesions of the labyrinth. *Kop. Tid.*, No. 30, 1899.

239. BONNIER. Labyrinthine tabes. *Nouvelle iconographique de la Salpêtrière*.

238. A short description of the pure labyrinthine cases observed at the Copenhagen clinic during the year 1898. The diagnosis was usually made with aid of Bezold's continuous tone series. The treatment consisted in pilocarpine injected subcutaneously 1 cg, four times a week. Hearing was not thereby restored, but subjective noises and vertigo were usually improved.

STEIN.

239. As numerous symptoms of tabes can be explained better as an affection of the labyrinth rather than of the spinal cord, and as certain symptoms occur frequently in labyrinthine lesions without tabes dorsalis—Romberg's symptom, nystagmus, strabismus, diplopia, etc.—BONNIER, from anatomical, physiological, pathological, and clinical data, has described a tabes labyrinthica.

BRUHL.

#### NOSE AND NASO-PHARYNX.

##### a.—GENERAL PATHOLOGY.

240. MORITZ and RÖPKE. On the health of metal workers about Solingen. *Zeitschr. f. Hygiene u. Infectionsk.*, vol. xxxi., p. 231.

241. SCHEIER. Post-mortem examination of the naso-pharynx. *Virchow's Archiv*, vol. 157.

242. LÖWENBERG. A pathogenic sarcina. *Annales de l'Inst. Pasteur*, April, 1899.

240. This paper, chiefly of hygienic interest, presents some points of importance for the specialist. As a result of the great quantity of metallic and stone dust inspired, an atrophic condition of the mucous membrane of the nose, pharynx, and larynx was found present, accompanied by a degree of anæsthesia in many

of the workmen examined. 48.2 % of those examined, suffered from chronic irritation of the larynx, 12 % from pulmonary affections. The following can be taken as a proof for the importance of nasal respiration : sharpeners with obstructed nasal respiration are more disposed to lung trouble than those with normal noses.

In 1885-1895, 72.5 % of all metal sharpeners succumbed to pulmonary tuberculosis, while of the remaining male population the mortality of consumption was only 35.3 %. RÖPKE.

242. LÖWENBERG demonstrated in 1884 that the fœtor in ozæna was caused by the microbe described by him ; recently he has discovered that the fœtor may rarely be caused by other bacteria. In one of the cases a new sarcina was found, pathogenic for animals. The nasal mucus in this case was composed of multi-nuclear leucocytes and enormous packets of this sarcina.

HARTMANN.

b.—METHODS OF EXAMINATION AND TREATMENT.

243. BAUMGARTEN. Natro-sulphocirinate of phenol in rhinolaryngology. *Wien. klin. Wochenschr.*, No. 39, 1899.

244. FARLOW, J. W. An adjustable nasal splint. *N. Y. Med. Journ.*, Sept. 9, 1899.

245. ARMSTRONG, HERMANN L. A nasal enchondromatome. *N. Y. Med. Journ.*, July 8, 1899.

243. This remedy, useless in acute and chronic rhinitis and hypertrophies, has been of some value in atrophic rhinitis with and without ozæna. It is used in a 30 % solution and applied 2-3 times locally to the mucous membrane. POLLAK.

244. The splints consist of two nearly flat pieces of perforated silver with an oval spring of composite metal between them, through which runs a small rod headed at one end and supplied with thread and nut at the other. By turning the nut with the key the blades of the splint may be separated to any desired width. M. TOEPLITZ.

245. A bent bone-cutting forceps to take the place of the saw in operations under general anæsthesia, which is necessary for its application. M. TOEPLITZ.

c.—EPISTAXIS.

246. RANGE, P. Epistaxis and its treatment. *Wien. med. Blätter*, No. 33, 1899.

247. NATIER, M. Recurring spontaneous epistaxis; five cases. *La parole*, No. 8, 1899.

248. KOMPE. Epistaxis as an early symptom of cerebral softening, and the relation of both affections to arterio-sclerosis. *Arch. f. Laryng.*, ix.

249. MANNASSEH, A. J. A case of epistaxis due to a leech. *Lancet*, Sept. 16, 1899.

246. The bleeding point is usually circumscribed at the lower and anterior part of the septum, or it may be situated in any part or even be diffuse. Treatment consists in tamponade, gauze impregnated with gelatinized serum, a solution of gelatine 5-10 % in artificial serum (sodium chloride 7 %).

POLLAK.

247. A complete description of 5 cases of spontaneous hemorrhage from the nose, without any features.

HARTMANN.

248. Spontaneous hemorrhage in older persons is always suspicious of arterio-sclerosis, even though the peripheric vessels appear normal. If changes in the intellect or in the psychic condition are also present, commencing brain softening must be thought of. KOMPE describes five cases but does not state the rhinoscopic condition. Potassium iodide seemed to be of value.

ZARNIKO.

249. A young child was brought to MANNASSEH of Beyrout on account of epistaxis. On looking into the mouth the end of a leech was seen below the soft palate, being evidently attached to some part of the posterior nares.

The bleeding ceased on removal.

The leech was supposed to have been conveyed by drinking from a spring.

ARTHUR CHEATLE.

d.—TUMORS OF THE NOSE.

250. HOPMANN. On the operation of the hard fibroma at the base of the brain without preliminary operation; remarks on certain disturbances of speech. *Münch. med. Wochensch.*, No. 32, 1899.

251. COSTON, H. R. A nasal polypus of unusual size, springing from the nasal septum of a child of twelve years. *N. Y. Med. Journ.*, Aug. 5, 1899.

250. In a girl, twelve years old, the lower part of a nasal polyp projected half an inch below the soft palate. Both nasal passages



were obstructed by the polyp, which occupied the naso-pharynx. The tumor was drawn down by a hook and finally removed by the finger introduced in the naso-pharynx. The tumor was attached to the nasal septum by a broad base, and had a nasal and two pharyngeal prolongations. It measured  $3\frac{1}{4}$  inches in length,  $1\frac{1}{4}$  inches in breadth, and  $\frac{3}{8}$  inch in thickness, and weighed one ounce. It was almost a pure myxoma. The four polypi had one common pedicle. TOEPLITZ.

251. This was a case of fibroma of the base of the skull, weighing seventy-six gr., in a boy eleven years old. All consonants, especially the sibilant sounds, were imperfectly pronounced on account of the large cavity remaining after the operation. This was immediately relieved by plugging the nose. SCHEIBE.

c.—ACCESSORY CAVITIES.

252. LAURENT. The development of the accessory cavities; demonstration. *Bull. de la société Belge d'otologie*, 1899, p. 51.

253. VEIS, J. Empyema of the accessory cavities of the nose; their importance for the general practitioner. *Wien. klin. Rundschau*, Nos. 36 and 37, 1899.

254. CLINÉ. Diseases of the maxillary antrum. *Four. Amer. Med. Ass.*, Sept. 23, 1899.

255. SCHLAGENHAUFER. A case of cystic degeneration of the nasal mucous membranes and the accessory cavities. *Wiener klin. Wochenschr.*, No. 35, 1899.

256. SPIESS, G. Sequestrum in the alveolar process after perforation of the maxillary antrum. *Arch. f. Laryngol.*, ix.

257. SPIESS, G. Endonasal surgery of the frontal sinus. *Arch. f. Laryngol.*, ix.

252. The mastoid antrum is present in the fœtus of six months, the ethmoid cells in the seventh month, the maxillary antrum at birth, the frontal sinus in the second year, the sphenoidal sinus in the eighth year. BRÜHL.

253. VEIS describes the symptoms of accessory-sinus disease. His experience as to curability and prognosis is as follows: The cure of the suppuration is attained relatively seldom, and then only after months of treatment; all progress may be lost by a simple coryza.

254. CLINÉ'S 150 cases occurred between the ages of 20 and 70; 48 in females, 102 in males. Of 140 cases of his own observation,

6 were sarcomatous; 50 per cent. of the cases were of dental origin, 40 per cent. were due to dental caries and influenza combined, and 10 per cent. to ethmoiditis and various nasal obstructions; 20 cases were acute, 120 chronic, of from 2 months' to 7 years' standing. In 16 cases, œdematous swelling of the mucous membrane; in none, polypoid growth was found; 5 cases were bilateral, 75 per cent. on the right side. For diagnosis, peroxide of hydrogen into the ostium maxillare and the position of the head, and in cases with deflected septum  $H_2O_2$  through an exploratory puncture was used. The antrum was opened through the alveolar root.

M. TOEPLITZ.

255. SCHLAGENHAUFER describes a case of cystic degeneration of the nasal mucous membrane, of both maxillary antra, of the sphenoid and ethmoid cells. This caused a fatal purulent meningitis. The cysts in the sphenoidal mucosa occluded the sphenoidal opening and caused a subsequent dilatation of the sphenoidal cavity. As regards the glands of the nasal mucous membrane, the author finds them to be partly mixed glandular structures, producing mucus and serum in equal quantities.

POLLAK.

256. After perforating the antrum through the alveolar process, great tenderness persisted in irrigating. Four months later, a sequestrum became loose, which completely surrounded the perforation. SPIESS believes that the bone necrosed from overheating from a rapidly revolving drill. He recommends a drill with a thin shaft.

ZARNIKO.

257. SPIESS follows the method of Schäffer for entering the frontal sinus, with the following exceptions: 1, he uses an electromotor trephine instead of a probe; 2, verifies the course of the instrument by a radiograph. He has practised this method in eight cases. It is necessary to guard against the drill not slipping, which occurred in one case and the drill appeared externally next to the eye. Otherwise there is no danger.

ZARNIKO.

#### f.—OTHER AFFECTIONS.

258. REUTER. Neuritis olfactoria (Diseases of the olfactory ganglion). *Arch. f. Laryngol.*, ix.

259. BÖNNINGHANS. The correction of marked deflections of the cartilaginous and bony septum. *Arch. f. Laryngol.*, ix.

260. OSTMANN. The removal of posterior hypertrophies of the inferior turbinates. *Arch. f. Laryngol.*, ix.

261. KENG, L. B. A peculiar case of nasal obstruction. *The Scottish Med. and Surg. Jour.*, Oct., 1899.

258. Neuritis olfactoria is caused by injuries to the first neuron, the region from the olfactory cell to the glomeruli of the olfactory bulb. It is characterized by: 1. Extensive anosmia not accounted for by the rhinoscopic condition. 2. The various classes of odors are unequally affected as opposed to respiratory anosmia. 3. Changing character of the anosmia. 4. Unusually rapid exhaustion of the sense with consequent lack of delicacy of smell, bad smells causing a less disagreeable sensation. REUTER describes this neuritis olfactoria in influenza, tabes dorsalis, the various intoxications (tobacco, cocaine, etc.), in over-stimulation of the olfactory nerve from strong sensations of smell, in pigment atrophy of the olfactory region; finally, the congenital senile anosmia, injuries of the olfactory ganglion, and basal diseases.

ZARNIKO.

259. BÖNNINGHANS has extended Krieg's resection (excision of a piece of cartilage and mucous membrane from the convex side) for the deviated septum by removing also the deviated bone lying behind. He describes his excellent results in nineteen cases, and gives an exact description of the operation and after-treatment with excellent critical remarks on the indications and chances for success.

ZARNIKO.

260. OSTMANN has difficulty in applying the snare about the posterior hypertrophies in some cases, and there has been troublesome hemorrhage. He advises to draw one or two furrows with the galvano-caustic wire along the posterior and lower edge of the turbinal; the half-divided piece can then be removed without hemorrhage with the cold snare.

ZARNIKO.

261. A Japanese workman was brought to KENG on account of nasal obstruction and weakness. Three months previously, while bathing, he felt something slipping into one of his nostrils.

In a few days he discovered that when he bathed, something smooth, velvety, and cool crept down the left nostril. By applying some fresh water to the nose he could induce the leech to elongate itself and move about in the water.

On examination, the nose was slightly swollen on the left side, and on looking into the nose a black mass could be seen projecting from the superior meatus.

After a few drops of chloroform had been inhaled by the patient through the nostril, the leech was easily removed by means of forceps.

ARTHUR CHEATLE.

SOFT PALATE, PHARYNX, AND BUCCAL CAVITY.

262. SÄNGER. Perverse action of the soft palate. *Wien. klin. Rundschau*, No. 32, 1899.

263. KRONENBERG. Angina and acute articular rheumatism. *Münch. med. Wochenschr.*, No. 27, 1899.

264. ONODI. Lipoma of the tonsil. *Arch. f. Laryngol.*, ix.

265. MERX. A case of chronic urticaria of the throat. *Münch. med. Wochenschr.*, No. 36, 1899.

266. STUCKY, J. A. Removal of tonsil and adenoids, followed by fatal result. *Annals of Otol., Rhinol., and Laryngol.*, May, 1899.

267. COULTER, J. HOMER. Observations on tonsillotomy. *Four. Amer. Med. Assoc.*, Sept. 23, 1899.

268. RAY, MORRISON. A case of sarcoma of the tonsil. *Med. News*, Sept. 2, 1899.

269. SCHADLE, JACOB A. Accessory thyroid tumors at base of tongue. *Four. Amer. Med. Assoc.*, Aug. 12, 1899.

270. THEISEN, CLEMENS F. Tuberculosis of pharynx. *Four. Amer. Med. Assoc.*, Aug. 12, 1899.

271. GRIFFITHS, G. W. A rare abnormality of the mouth. *Brit. Med. Four.*, July 29, 1899.

262. The perverse action of the soft palate, according to SÄNGER, is that in the formation of "m," "n," "ng," the soft palate is not let down, but is curved. The diagnosis is made when a patient has an obstructed nasal speech and no cause can be found therefor in the throat or nose.

POLLAK.

263. Six days after the removal of the papillary hypertrophies from the lower turbinate with the cold snare, articular rheumatism set in and terminated fatally. KRONENBERG assumes an etiological connection. After a similar operation on the other side, a month previously, angina set in.

SCHEIBE.

264. Microscopic pictures of two cases of this rare new formation, which ONODI had removed from children.

SCHEIBE.

265. In this case the soft palate was usually affected, rarely the tongue, the epiglottis, the vocal cord, and the skin. Urticaria scripteria was also present, but on the skin and not the mucous membrane. After many therapeutic trials, bromide of potash helped.

SCHEIBE.

266. A boy, æt. fifteen, had been suffering for two weeks from

tonsillitis and quinsy, aggravated by "hacking cough." He had rigors and hot flushes at short intervals, accompanied by profuse sweating, pulse quick and full, temperature  $101^{\circ}$  F. The left tonsil was enormously enlarged, protruding beyond the middle line, the crypts were filled with pus, the anterior and posterior pillars were adherent to the tonsil, the gums bled freely and were soaked with pus, and the pharyngeal vault was filled with adenoids and covered with offensive discharge. The diagnosis of general septicæmia was made, and the removal of the tonsil and adenoids resorted to. Two hours after the operation, profuse bleeding from the nose and mouth occurred, and was checked. Pulse became quick, and collapse set in. No special bleeding point was found, but general oozing of venous blood took place, which was also stopped. Pulse improved, transfusion of hot normal salt solution was made, but patient died nine hours after operation.

M. TOEPLITZ.

267. COULTER advocates the radical removal of the hypertrophied faucial tonsil by means of the cautery, for it gives a cosmetically perfect throat, liberates the pillars, removes mechanical obstructions to the sound waves, relieves reflex disturbances, produces retraction and restoration of pillars to normal, and prevents the return of follicular involvement.

M. TOEPLITZ.

268. Patient, æt. thirty-seven, male, had loss of flesh, and presented a mass, as large as an olive, hanging by a narrow pedicle from the lower part of the tonsil, which recurred after removal, and was found to be a lympho-sarcoma. He had lately been suffering from the stomach and bowels. Cervical glands now enlarged. After a month a tumor was found in the left side below the ribs, of the size of a turkey egg. Laparotomy found bowel obstructed by nodular mass in the wall of the gut, and the mesenteric glands along the vertebral column greatly enlarged. Death ensued. The mass was a round-celled sarcoma, and probably represented a case of Hodgkin's disease.

M. TOEPLITZ.

269. A female, æt. twenty-five, presented at the base of the tongue a growth of the size of an English walnut, which, when hyperæmic, filled the fauces. After the use of electrolysis, the tumor was reduced to one-third, but copious bleeding occurred during the last sittings. Dr. McBurney excised the tumor, through an incision made in the middle line from the chin down to the hyoid bone. The tumor was only then found to be a gland



of the thyroid-ductless type. Another case, clinically observed by SCHADLE, could not be verified by operation and the microscope. Schadle believes that the occurrence is due to a congenital defect or a lack of closure of the thyreo-glossal duct as development goes on.

M. TOEPLITZ.

270. THEISEN reports two cases. In the first, of a male, aged twenty-one, the posterior pharyngeal wall, uvula, tonsils, nasopharynx, and lungs were involved; the larynx was free. The disease terminated fatally within six weeks. In the second case, of a female, aged twenty-two, there was a small superficial ulcer upon the posterior pharyngeal wall, a small ulcer in the interarytenoid space of the larynx, and infiltration of the right apex. Theisen had also thirty-five specimens from twenty-three cases of adenoids and twelve of hypertrophied tonsils, taken from unselected cases of children between the ages of four and fifteen years, examined by Dr. Blumer. Of all these, only two tonsils were found to be tuberculous, in one primary with tubercular arthritis of the knee.

M. TOEPLITZ.

271. A child at about the eighth month of gestation presented the following conditions. The gums were completely adherent to each other and the cheeks of the gums posterior to the position of the future canine teeth. A cleft was present in the hard palate; from the sides of the cleft two small fleshy ridges hung vertically downwards. After death it was found that the posterior half of the tongue was alone developed, there was no frænum, and the soft palate was continuous with the posterior wall of the pharynx, the uvula being absent.

ARTHUR CHEATLE.

## BOOK NOTICES AND REVIEWS.

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**I.—Encyclopædie der Ohrenheilkunde** (*Encyclopædia of Otolology*), edited by Dr. LOUIS BLAU, in Berlin. Prepared by Dr. Alt, Vienna, and sixty-one other aurists, almost all Germans—*e. g.*, Politzer, Grunert, Habermann, Hessler, Jacobson, Jansen, Mygind (Copenhagen), Schwabach, Steinbrügge, Urbantschitsch, Wagenhäuser, Zeroni, Zuckerkandl. Leipzig, 1900. Double-column large-8vo, with but few illustrations, 452 pages, glazed paper, good type. Price \$5.75. G. E. Stechert, 9 E. 16th St., New York.

It contains the essentials of embryology and the comparative, macroscopic, and microscopic anatomy of the organ of hearing, a detailed exposition of the diseases of the ear, etiology, symptomatology, diagnosis, and treatment, with description of instruments, apparatuses, medicines, etc., the various therapeutic procedures; further on an article (meagre) on the history of otology.

The arrangement is alphabetic. It begins with "Abdominal Typhus (Typhoid): its Influence on the Ear,"  $1\frac{1}{2}$  columns, by Friedrich. To give an idea of the work we cite other examples: "Acusticus and Acoustic Centres"; "Anatomy," by Steinbrügge,  $2\frac{1}{2}$  columns; "Diseases," by Alt, Habermann, and Ascher,  $8\frac{1}{2}$  columns; "Adenoid Vegetations," very thorough, by Brieger, 23 columns; "Bacteria in the Healthy and Diseased Ear," Gradenigo, 8 columns; "Corti's Organ," with figure, Katz; "Extradural Abscess," Grunert,  $8\frac{1}{2}$  columns; "Ossicles, Diseases and Treatment," Ludwig, Passow, Panse; "Hearing Tests," Schwabach; "Hysteria," Gradenigo; "Influence of Climate and Weather," Hessler; "Labyrinth," Katz and others, 30 columns; "Locomotive Engineers"; "Air Douche," Politzer; "Lumbar Puncture," Leutert; "Mastoid Operation," 25 columns, Grunert; "Ménière's Disease," 16 columns, Wagenhäuser; "Otitic Meningitis," Brieger;

"Nasal Passages," Görke, 12 columns ; "Sinuses of Dura Mater," 16 columns, Brieger, Jansen.

This may suffice to show how thoroughly, authoritatively, and up-to-date the many articles of the work have been prepared, and that the volume will be welcomed and appreciated as a ready and reliable book of reference

H. K.

## II.—The Year-Book of the Nose, Throat, and Ear.

"The Nose and Throat," edited by G. P. HEAD, M.D., Professor Post-Graduate Med. School, Chicago.

"The Ear," by ALBERT H. ANDREWS, M.D., Professor Post-Graduate Med. School, Chicago. Chicago Med. Book Co., 1900. Price \$1.50.

We welcome this year-book as instructive and convenient. Most periodicals give more or less extensive reports on the current literature, but a book which comprises the publications of a year in a systematic and comprehensive form is most useful for reference both to the practitioner and the scholar in consulting the newest authors on a case or a literary production. The book contains 274 well printed pages, a review on the year 1899, with supplements from 1898 in a very practical arrangement. As an introduction, the publications in book-form are announced and briefly commented on—for instance, the fifth edition of Lennox Browne's *The Throat and Nose*, Kyle's *The Diseases of the Nose and Throat*, Randall's and Coakley's text-books, and others.

The reviews are systematically arranged, like the table of contents of a text-book—for instance, "The Ear" begins with the articles on the "External Ear," continues with the "Auditory Canal," "Drum Membrane," and so forth. The references are concise and sufficient. They are taken from 170 journals whose titles are printed in a "List of Periodicals," of which two copies are furnished, one appended to the end of the text, the other as a fly-leaf for the reader to have in hand when he peruses the book. Each reference contains a number, corresponding to the title of the journal in the list, and the date of publication behind the name of the author, as in most bibliographies placed at the end of a longer article. A detailed index of authors and subjects is at the end of the volume. In future years it might be desirable to furnish a "Table of Contents," as in every good text-book.

As to the quality of the reviews we cannot say that the dimensions of the reports are always commensurate with the importance of the original articles ; apart from that and many omissions,

especially of foreign publications, we have noticed that a good many of the reports are reproductions. In future years we may expect improvements in this respect and, as Americans, welcome with pride "The Year-Book on the Progress of Rhinology, Laryngology, and Otology, consisting exclusively of original reports"—as, for instance, Nagel's *Annual Report of Ophthalmology*.

H. K.

### III.—A Manual of Diseases of the Nose and Throat.

By CORNELIUS GODFREY COAKLEY, M.D., Clin. Prof. Laryngology in the University and Bellevue Hospital Medical College, New York City. Illustrated with 92 engravings and 2 colored plates. Lea Bros. & Co., Philadelphia, 1899. A small-8vo volume of 536 pages, for students and practitioners. \$2.75.

It contains: Chapters I. and II. Anatomy of the nose and larynx. III. Examination of the upper respiratory tract; very clear, though compact; excellent details of post. rhinoscopy and laryngoscopy. IV. Antisepsis in operations. V. Nasal obstruction, a list of the various causative conditions. VI. Diseases of the nose; acute, purulent, hypertrophic rhinitis (with full details of operative treatment). Atrophic and vasomotor and membranous rhinitis. Spurs and deviations of the septum. Description of Asch's operation, etc. Abscess and perforation of septum. Tuberculosis and syphilis of the nose. Foreign bodies, polypi, and other benign and malignant growths. Anosmia, hyperosmia, parosmia. Epistaxis. VII. Diseases of the accessory sinuses, diagnosis and treatment. VIII. Diseases of the naso-pharynx. Adenoids are well described; their removal: the middle portion with the Löwenberg forceps, the lateral ones with Gottstein's curette, seems at present to be replaced by the removal with a suitable curette (Beckmann's, for instance) in one properly directed bold stroke. The reviewer saw this mode extensively practised in Berlin last summer, and has since done it himself many times with perfect satisfaction. It seems neither necessary nor even desirable to remove the whole mass of the adenoid growths, just as it is neither necessary nor judicious to remove the whole bulk of the faucial tonsils. Remnants will mostly disappear by their natural shrinkage, and if this should not be the case, or relapses occur, they can easily be dealt with later. I do not mean, however, that we should leave notable portions in Rosenmüller's fossæ or elsewhere.

The remainder of the chapter is taken up by syphilis, foreign

bodies, polypi, and other benign and malignant tumors of the nasopharynx. The description is rather short, but we should not forget that the treatise is intended for students and practitioners of general medicine. IX. Diseases of the oro-pharynx, tonsils, and tongue. This is a very long (123 pages), important, and well-written chapter, dealing, among other affections, of acute and chronic pharyngitis and tonsillitis, retropharyngeal and peritonsillar (quinsy sore-throat) abscesses, chronic tonsillitis (enlarged tonsils) and their treatment (Mathieu's and other tonsillotomes), hypertrophy of the lingual tonsil, diphtheria with treatment (intubation, etc.), syphilis (congenital, inherited, and acquired), lupus, mycosis, foreign bodies, and neuroses of the pharynx. X. The diseases of the larynx occupy 124 pages, appear to be well presented, with a colored plate (II., 8 figures), but as they have no relation to otology we shall not enter into details. Chapter XI. is devoted to general therapeutics of the diseases of the ear, nose, and throat. Classification, general rules, and numerous formulas. A most extensive index (14 double-columned pages) is appended, containing not only the pages of the subject matter, but also the prescription formulas of remedies.

Altogether Coakley's *Manual* is an excellent text-book for students and practitioners. It cannot fail to become popular. The printer's work is most satisfactory: the slightly glazed paper brings the illustrations out distinctly, without trying the eyes of the reader; the size and weight of the volume are convenient for handling, and the price is reasonable. H. K.

IV.—**Letter-, Word-, and Mind-Blindness.** By JAS. HINSELWOOD, M.A., M.D., Surgeon to the Glasgow Eye Infirmary. Small-8vo., 85 pages. London, H. K. Lewis, 1900. Price, 75 cents.

This little well-written and well-printed monograph is exceedingly interesting and not without a good deal of theoretical and practical importance. It is the re-editing of four papers read by the author before the Glasgow Medico-Chirurgical Society, which appeared in the *Lancet*. The author says: "These articles, embracing the result of extensive reading, as well as my own studies and observations, give a fairly comprehensive view of a subject which has not received much attention in English medical literature. I have thought that the publication of these papers in book form would make them more accessible to those interested in the subject." The subject is that of amnesic or



sensory aphasia in all its varieties, especially that of visual or optical aphasia or word-blindness. The five chapters are on: the visual memory; letter-, word-, and mind-blindness; a case of partial mind-blindness with dyslexia, a peculiar form of word-blindness; word- without letter-blindness; and letter- without word-blindness. To the aurist, all these forms of sensory aphasia are of particular importance in localizing a destruction or inaction of cerebral substance. The auditory memory centre seems to be located, with sufficient certainty, in the posterior end of the first temporo-sphenoidal convolution. The visual memory centre, with its subdivisions: word-, letter-, number-, and note-blindness, alexia, agraphia, etc., are all located in the temporo-sphenoidal lobe, but there is still uncertainty about their particular seats, a subject of great importance in diagnosing the presence and location of a brain abscess. The reviewer, who read the author's papers when they appeared, feels sure that every one of his colleagues will like to have this little book always at hand.

H. K.

**V.—The Cerebro-Spinal Fluid; its Spontaneous Escape from the Nose, with Observations on its Composition and its Function in the Human Subject.** By ST. CLAIR THOMSON, M.D., M.R.C.P. and F.R.C.S. Engl., Phys. to the Throat Hospital, Golden Sq.; Surgeon to the Royal Ear Hospital, London.

The author, stimulated by the observations of a marked case which he, thus far, has followed up two years, has compiled from literature all cases of hydrorrhœa nasalis, etc., he could find. Besides his own, he found 20 of undoubted cerebro-spinal rhinorrhœa, most of which were associated with cerebral symptoms and some with retinal changes. The picture of the disease, as far as symptoms are concerned, is clear and distinct; its pathology doubtful, only two autopsies being on record. The monograph is very remarkable as to perspicacity and painstaking labor in seeking to shed light on a rare and unrecognized disease. Last year the reviewer had under his care a marked case of cerebro-spinal rhinorrhœa in a woman of 54 years, who was very hard of hearing.

The excellent monograph of St. Clair Thomson will wake an echo everywhere, and we shall probably hear more of this disease in the near future. The author indicates which points should receive particular attention, especially what should be looked for in autopsies.

H. K.

VI.—**Pathologie und Therapie der entzündlichen Erkrankungen der Nebenhölen der Nase.** By Dr. M. HAJEK. F. Deuticke, Leipzig and Vienna, 1899, pp. 328.

The appearance of a book on the *Accessory Cavities of the Nose* will be eagerly welcomed by everyone interested in this branch of medicine which has made such rapid strides of recent years. This subject has usually received but scant treatment in general text-books on the nose, due chiefly to an inadequate appreciation of the anatomical relations involved. The only book previously issued on this subject, that of Grünwald, *Die Naseneiterungen*, has reached a second edition (and is soon to appear in an English translation); this book is essentially clinical and has received well merited recognition, but the anatomical part is very insufficiently dealt with. It is just in the anatomical part that Hajek's book will fill a much-felt want. Dr. Hajek's anatomical proficiency has long been known, especially by the many who have profited by his course of demonstrations in Vienna. The high excellence of this part of the book cannot be praised enough; the illustrations, especially showing the anatomical relations and peculiarities, are unusually well executed and very instructive. Though excellent and fundamental works on the anatomy of the nose and accessory sinuses have been published by Zuckerkandl, Fränkel, Onodi, and others, we find in Hajek's book all the essentials of anatomy in a compact form and discussed in direct relation to the pathology, symptoms, and treatment.

The book is divided into a general and a special part. In the former, the etiology, symptoms, and general diagnosis of accessory-sinus diseases are treated. In the latter, each accessory cavity or sinus is taken up in turn and more specially; the anatomy, pathology, etiology, symptoms, and treatment are exhaustively treated. It should be stated that the methods and difficulties of diagnosis are fully exposed.

A short chapter on accessory-sinus disease in ozæna is presented with the view of showing the frequent involvement of the sinuses in ozæna. Ocular and cerebral complications are discussed; the author acknowledges in this connection his indebtedness to Kuhnt's and Dreyfuss's monographs.

The book in short is a classic; we can only express the wish that an English translation may soon appear and thus make it more accessible to many English readers.

A. H. K.

## MISCELLANEOUS NOTES.

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### NOTES.

Among the many of the important results of the brilliant success of the VIth International Otological Congress, held in London in August, 1899, we like to note the foundation of

#### **The Otological Society of the United Kingdom.**

At a meeting held on Monday, December 18, 1899, the following gentlemen were elected to hold office during the first session :

President: SIR WILLIAM DALBY.

Vice-Presidents: URBAN PRITCHARD, THOMAS BARR, GEORGE FIELD.

Treasurer : A. E. CUMBERBATCH.

Librarian: E. CRESSWELL BABER.

Secretaries: CHARLES A. BALLANCE, ARTHUR H. CHEATLE.

Council : VICTOR HORSLEY, T. MARK HOVELL, EDWARD LAW, WILLIAM MILLIGAN, P. MCBRIDE, A. W. SANDFORD.

The meetings of the Society, which already numbers over fifty members, will be held at the Medical Society's rooms, 11 Chandos Street, Cavendish Sq., on the first Monday in the months of December, February, March, and May, at 4:30 P.M.<sup>1</sup>

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<sup>1</sup> The American Editor of these ARCHIVES is not afraid of committing an indiscretion by publishing the following part of a letter addressed to him by the President of the VIth Intern. Otol. Congress :

" You are quite right that the success of the Congress repaid, and more than repaid, all the trouble we were put to. The fact is, that all our large committees worked without the least friction, and seemed to vie with one another to see who could do the most. I should not have thought it possible for us all to have thus joined without signs of jealousy. The fact is that working for the Congress and its success has united the British aural surgeons as nothing else could have done. Moreover, the Congress has impressed the medical profession of the kingdom with the importance of this once despised branch."

Programme of the first ordinary meeting, Monday, February 5, 1900. CHARLES A. BALLANCE, Pres. ; ARTHUR H. CHEATLE, Hon. Sec.

AGENDA: (a) Minutes of last meeting. (b) Nominations. (c) Introductory address by the President. (d) A short paper on "Antiseptics in Aural Surgery," by Professor URBAN PRITCHARD.

(e) The following cases and specimens will be shown :

1. Dr. MILLIGAN—(i.) Notes of a case of Cerebellar Abscess recently operated upon. (ii.) Specimens of Abscess of the Cerebellum following Chronic Middle-Ear Suppuration.

2. Professor URBAN PRITCHARD—Specimen of Cholesteatoma removed through the Meatus, with the patient from whom it was removed. Antrum and Mastoid Process hollowed out.

3. Dr. DUNDAS GRANT—A case of Thrombo-phlebitis of the Lateral Sinus, treated by operation without ligature of the Internal Jugular Vein. Recovery.

4. Dr. TILLEY—(i.) Specimen of large Cholesteatoma removed from the Mastoid in a boy aged 14 years. (ii.) Specimens of Cholesteatoma removed from the Auditory Meatus.

5. Dr. SINCLAIR THOMSON—Male patient with continuous slight pain after the radical Mastoid operation.

6. Dr. RICHARD LAKE—Male with exostosis occluding external Auditory Meatus.

7. Mr. L. A. LAWRENCE—Elderly woman with a growth (?) in the Meatus. With microscopical section.

8. Dr. JOBSON HORNE—Specimen of Chronic Middle-Ear Suppuration with extension to the Labyrinth and through the Saccus Endolymphaticus to the Lateral Sinus and Meninges.

9. Mr. ARTHUR CHEATLE—(i.) Patient in whom a large part of the Auricle and the whole of the Meatus has been removed for Adeno-Carcinoma, and in whom the post-aural operation has been performed. With specimen and microscopical section. (ii.) A case of Chronic Middle-Ear Suppuration and Thrombosis of the Lateral Sinus ; in which the Internal Jugular Vein was not ligatured. Recovery.

10. Mr. ERNEST WAGGETT—Sequestration of Cochlea in a case of cured Cerebellar Abscess.

**SOCIETY MEETINGS.**

**Fifth Triennial Congress of American Physicians and Surgeons**, Washington, D. C., May 1, 2, and 3, 1900. President, Dr. H. G. MILLER, Providence, R. I. Secretary, F. L. JACK, Boston, Mass. Dr. F. B. LORING, Washington, D.C., member of arrangements for the Otological Society.

**American Medical Association**, Atlantic City, N. J., June 5-8, 1900. Section of Laryngology and Otology. President, C. R. HOLMES, Cincinnati; Secretary, J. A. STUCKEY, Lexington, Ky.

**Western Ophthalmological and Oto-Laryngological Society** will meet in St. Louis, Mo., April 7-9.

**British Medical Association Meeting, 1900.**

The sixty-eighth meeting will take place at Ipswich, from July 1st to August 3d, inclusive.

The officers of the Section of Laryngology and Otology are:  
President: SCANES SPICER.

Vice-Presidents: HERBERT TILLY, WILLIAM MILLIGAN.

Hon.-Secs.: HARRY LAMBERT LACK, 48 Harley Street, London, W.; ARTHUR YOUNG PRINGLE, 64 St. Matthew Street, Ipswich.

The **Société Française d'Otologie et de Laringologie** will meet Monday, May 14, 1900, at 8 P.M. Hôtel des Sociétés Savantes, rue Danton, Paris. The subjects for general discussion are: 1° De la septico-pyohémie d'origine otique. Introduced by M. LAURENS. 2° Des ulcérations de l'amygdale. Introduced by MM. RAOULT et BRINDEL. *Le Secrétaire général*, Dr. JOAL, 17 rue Cambacérès, Paris.

**APPOINTMENTS.**

Appointed Aural Surgeons at the Manhattan Eye and Ear Hospital, New York, January 16, 1900:

JAMES B. CLEMENS, T. PASSMORE BERENS, WENDELL C. PHILLIPS. J. B. C.

At its last meeting, the Board of Trustees of the Eye, Ear, Nose, and Throat Hospital of New Orleans elected Dr. GORDON KING to the position of Acting Surgeon in charge of the Ear, Nose, and Throat Department of that institution.



At the same meeting, Drs. H. J. DUPUY and A. B. GAUDET were made Assistants in that service.

New Orleans, March 1, 1900.

J. GALBRAITH CONNAL, M.B., has been appointed Lecturer on Aural Surgery in Anderson's College Medical School, Glasgow.

ERNEST WAGGETT, M.B., B.C., has been appointed Surgeon to the London Throat Hospital.

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### PROPOSED MEMORIAL

OF THE SIXTH INTERNATIONAL OTOLOGICAL CONGRESS.

Prof. A. POLITZER sends the following circular for publication in these ARCHIVES. Needless to say that we heartily endorse the proposition :

In consideration of the great hospitality shown us by our English colleagues during the Otological Congress in London, we feel it our duty to give them some indication of our gratitude.

We would therefore propose to have made heliotypes of the President, Dr. URBAN PRITCHARD ; the Secretary, Dr. CRESSWELL BABER, and the Treasurer, Dr. CUMBERBATCH, and to send copies of them to all the English members of the Congress.

We trust you will endorse this proposal and subscribe the amount of one dollar, which will entitle you to a copy of the portraits.

The list of subscribers will be presented to Dr. PRITCHARD.

Kindly send the subscription to Prof. POLITZER, Gonzagagasse 19, Vienna, Austria [or to Dr. H. KNAPP, 26 West 40th St., New York, who will receive, acknowledge, and forward them.]

DR. BENNI,	PROF. LUCAE,
DR. CAPART,	DR. MOLL,
PROF. GRAZZI,	DR. ROHRER,
DR. GUYE,	DR. SCHMIEGELOW,
PROF. KNAPP,	DR. STEIN.

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### OBITUARY.

Dr. CHARLES DELSTANCHE died January 27, 1900, at Brussels in the sixtieth year of his life. His father was the first aural specialist in Belgium. The son studied at the University of Bologna in the "Collège Belge," still existing in that Italian city,

and later at several European universities. Returned to Brussels he practised general medicine for three years and distinguished himself in particular during the cholera epidemic in 1866. In 1872 he published his thesis on *Tinnitus Aurium*, for which he obtained the position of *agrégé* to the University of Brussels. Since then he has made many valuable contributions to aural surgery. His instruments have been greatly appreciated, especially his *raréfacteur*, for which the International Otological Congress of London awarded him the Lenval prize in August, 1899. In 1872 he was authorized to teach otology at the Brussels University, and in 1874, owing to his efforts, the first Dispensary for Ear Diseases was opened at the St. John's Hospital. In 1890 he was appointed clinical professor of otology. As a physician he was no less popular than as a teacher. He was present at all the larger meetings of otologists. At the Fourth International Otological Congress at Milan, 1880, he was a conspicuous figure by his interest and eloquence in the debates and social gatherings. He was at the zenith of his reputation, when he led the deliberations as president of the Fifth International Congress, in his native city, in 1888. In the same year he founded the Belgian Otological and Laryngological Society.

As the last, but by no means least factor of his happy career, we should not omit to mention that Charles Delstanche enjoyed a cloudless family life and witnessed the development of a promising son as his successor.

ARTHUR HARTMANN.

#### **Contents of the last issues of the Zeitsch. für Ohrenheilkunde (German Edition of these ARCHIVES).**

Since our last report on the contents of the German edition of these ARCHIVES in our No. 4, August, 1899, a whole volume (XXXV.) with 19 original articles (some of them translations from the English edition) has appeared, which will soon be published in the English edition; furthermore three numbers of Vol. XXXVI. of the German edition have been published; a double number issued December, 1899, and No. 3, issued February, 1900. The English edition has never been backward in the publication of the carefully prepared reports on the progress of otology, nor in matters of general and professional interest, whereas the numerous original papers could not be rendered in English at a short notice. Our next numbers will contain important papers with exquisite illustrations.